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ABSTRACT

A 3-year study of the Monongalia County (Morgantown, W. Va.) Follow Through Program is presented. The program, known as Educational Renaissance in Appalachia (ERA), was designed to provide educational countermeasures to assist children in acquiring the ability to question values critically and to develop new concepts in lieu of some of the values and beliefs inherent in poor Appalachian children. Head Start and non-Head-Start pupils were evaluated at 1st, 2nd, and 3rd grade levels in terms of objectives related to behavior change through value modification, developing a rational value system through nonverbal experiences, language fluency development, improved muscular coordination and sensory discrimination improvement, and nonverbal emphasis on self-concept improvement. With the application of various measurement techniques (including both locally originated and standardized instruments), it was found that Project ERA requires at least 3 years before the learning disadvantages of rural, poor Appalachian children can be overcome. Other findings are presented, along with recommendations and 36 tables of data. (AL)

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# PROJECT ERA:

## A THREE YEAR STUDY OF A FOLLOW THROUGH PROGRAM

## A Longitudinal Study of the Monongalia County Follow Through Program

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A THREE YEAR STUDY OF A FOLLOW THROUGH PROGRAM

A Longitudinal Study of the Monongalia County Follow Through Program

## INTRODUCTION

An examination of the literature and research relating to Appalachia provides insights and understandings on the dilemma which faces educational decision-makers in the Region. The Appalachian people reflect a proud heritage of freedom and independence. They are a people who have withstood the onslaught of adversity in war, poverty, economic exploitation, political exploitation, and the harshness of the Region's geography; resulting from these adversities, an Appalachian culture evolved which guaranteed the people's survival --- economically and psychologically.[1]

The experiencing of these adversities have left their mark upon the character, mores, and traits of the Appalachian people. The heritage of the Appalachian people has uniquely mutated their concept of political institutions, public service agencies, religion, medicine, cultural arts, social relationships, and education.[2]

What is it like to be a part of the rural, Appalachian culture? It would appear that the answer to this question is intimately related to decisions affecting the implementation of curricular and instructional

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[1]David A. Puzzuoli, An Evaluation of the Harrison County E.S.E.A., Title I, Project: 1969-70 (Morgantown, W. Va.: West Virginia University, 1970), p. 1.

[2]Ibid.

models in the schools of Appalachia. It has been said that poverty is

> like a room with no windows and no doors... it is like a jail cell where millions are imprisoned...our free society does not purposely sentence anybody to do time there, but unwittingly it sentences large segments of the population to this windowless, doorless room from which escape is so difficult...[3]

In Appalachia there can be found many "rooms with no windows and no doors" which seriously constrict the potential development of children and adults alike. A number of writers have pointed out that rurality, by its very nature, may cause pupils to be disadvantaged in relation to their urban peers.[4] Learning handicaps correlated with rural Appalachian youth appears to be directly related to the lack of a stimulating environment and the remoteness from the mainstream of contemporary society experienced by these children.

Hooper and Marshall have indicated that "...there is absolutely no question that children in the rural Appalachian region require extensive educational improvement."[5] For the rural disadvantaged child, three characteristics --- socio-economic status, low level of aspiration, and attitudes non-supportive of education progress --- are linked with educational achievement to form a cycle cause and effect.[6]

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[3]George W. Jones, "Compensatory Education for the Disadvantaged," NEA Journal, April, 1967, p. 21.

[4]Everett C. Addington, "Disadvantaged Rural Youth," E. W. Gordon (ed.), Review of Educational Research 40:1, February, 1970, p. 69.

[5]Frank H. Hooper and William H. Marshall, The Initial Phase of a Pre-School Curriculum Development Project, Final Report, (Morgantown, W. Va.: West Virginia University, 1968), p. 1.

[6]Addington, op. cit.

As Kamii and Radin have stated:

> Academic success is crucial to the disadvantaged child, for unless he can perform adequately in the classroom, all efforts to enhance his self-image, increase his desire for further education, and enable him to participate fully in our society are likely to fail in the long run.[7]

Evidence indicates that the cognitive development of the disadvantaged child is hampered by a

> ...lack of verbal mediators, as indicated by his difficulty in attaching labels to objects and people and by his difficulty with syntactical mediation. Evidence also shows that the disadvantaged child fails to develop learning sets, learning abilities, and learning styles.[8]

During the 1960's, National attention was focused on the problems of the Appalachian poor. Congress passed many significant acts (Appalachian Highway Act, Appalachian Development Act, etc.) in an attempt to stimulate the economic, cultural, and educational development of Appalachia.

Through the establishment of the Office of the Economic Opportunity, the passage of the Economic Opportunity Act and the Elementary and Secondary Education Act of 1965, Congress made a diligent attempt to improve the educational opportunities available to the children of Appalachia.

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[7]Constance K. Kamii and Norma L. Radin, "A Framework for a Pre-School Curriculum Based on Some Piagetian Concepts," The Journal of Creative Behavior, 1:3, 1967, p. 323.

[8]John P. DeCecco, The Psychology of Learning and Instruction: Educational Psychology (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1968), p. 222.

Follow-Through

The Follow-Through program was authorized under Title II, of the Economic Opportunity Act, "Urban and Rural Community Action Programs." The basic purpose of this title, as stated in Section 201 (a), is:

> to stimulate a better focusing of all available local, State, private, and federal resources upon the goal of enabling low-income families, and low-income individuals of all ages, in rural and urban areas, to obtain the skills, knowledge, and motivations and secure the opportunities needed for them to become fully self-sufficient.

Section 222 (a) of the Economic Opportunity Act, P.L. 90-22, authorizes:

> A program to be known as "follow-through" focused primarily upon children in kindergarten or elementary schools who were previously enrolled in Head Start or similar programs and designed to provide comprehensive services and parent participation activities...

The Follow-Through program has been established by the U. S. Office of Education and the Office of Economic Opportunity to sustain and supplement in early grades the gains made by low-income children who have had a full year's experience in a Head Start or comparable pre-school program. The program is administered by the U. S. Office of Education under a delegation of authority from the Office of Economic Opportunity.

Follow-Through is designed to meet the instructional, physical, and psychological needs of young children from low-income families in a program of comprehensive services and parent participation activities.

The following components constitute comprehensive services as defined for Follow-Through programs: instruction, nutrition, health, social work and psychological services, and staff development.[9]

Follow-Through predates by one year the major federal programs established under the Elementary and Secondary Education Act of 1965. Head Start represented the intent of Congress to bring federal funds to bear on the root of the cause of poverty.[10]

Egbert further states:

> By the fall of 1966, it had become clear to educators, to parents, and to the Congress that the gains of Head Start were soon dissipated when graduates of the program entered the regular school program. In 1967, therefore, the Congress in response to a Presidential request, amended the Economic Opportunity Act to include a program similar to Head Start in the early school years for graduates of Head Start and other pre-school programs.[11]

Project ERA

Project ERA (Educational Renaissance in Appalachia) is a Follow-Through program designed to complement the developmental experiences children have gained in Head Start. Project ERA is a non-verbally oriented educational program in which the specific value systems of Appalachian children were isolated and concomitant learning experiences developed. Project ERA was designed to provide educational counter-

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[9]Follow-Through Program Manual (Washington, D.C.: U.S. Office of Education, February 24, 1969), p. 1.

[10]Robert L. Egbert, Individualized Instruction for Young, Disadvantaged Children (An Address Presented at the World-Wide Conference on Individualized Instruction and Learning, Seattle, Washington, July, 1969).

[11]Ibid.

measures which assisted children in acquiring the ability to critically question values and develop new concepts in lieu of some of the values and beliefs inherent in the poor Appalachian children.

The Monongalia County Schools received the original Follow-Through grant during the 1967-68 academic year. Subsequently, the Monongalia County Schools were refunded for Follow-Through Projects during the 1968-69 and 1969-70 academic years. Project ERA, as defined by the Monongalia County Schools was directed at the optimal development of each child and had continuity with previous Head Start, E.S.E.A., Title I, Projects, and other pre-school programs for disadvantaged children.

Project ERA brought together the resources of the school, community, and family to assist the child in his learning. With special assistance available through the Project, it was possible to provide individual pupils with educational diagnosis and prescriptions to meet their individual needs. The program utilized instructional specialists, new teaching techniques, teacher aides, school psychologists, social workers, physicians, and dentists, to meet the physical, mental, social, and instructional needs of the rural, poor Appalachian child.

The instructional needs of Project ERA pupils were met through a curriculum directed toward the development of more effective use of language; the development of perceptual and cognitive abilities; the extension of their range and experiences beyond present environmental limitations; the encouragement of appropriate behavior in a variety of social situations. The non-verbally oriented instructional approach

gave the pupils special opportunities for expression which enhanced the self-perception the child had of himself. In addition, Project ERA developed the pupil's neuro-muscular coordination through selective physical education activities.

The participants in Project ERA included children described as educationally/economically deprived as well as children from more advantaged home environments; therefore, both types of children were given the opportunity to broaden their background of social experience.

In order to meet the children's physical needs, provisions were made for adequate nutrition, learning spaces, physical activities, and medical and dental care.

A parent participation component was an integral part of Project ERA. Parents and school staff complemented each other in their efforts to enable each child to attain his full potential.

Instructional Activities

All pupils enrolled in Project ERA participated in the self-same individual instructional activities which centered upon the following process goals:

1. To provide a systematic instructional approach which provides opportunities for children to be responsible for their self-control and increase self-direction;

2. To change negative, reflective images to positive ones by building bonds of trust;

3. To increase awareness for verbalization among children and develop expectations within the children for cooperative social action and behavior.

In order to attain the primary objectives of Project ERA, the total Project was divided into seven components; they were: (1) the

instructional program, (2) the social services program, (3) the psychological program, (4) the health program, (5) the nutrition program, (6) the parent participation program, and (7) the staff orientation, training, and development program.

Primary Objectives

The primary objectives of Project ERA were:

1. To change behavior by dealing with values that are self-defeating to the self-concept held by culturally and economically deprived children,

2. To develop a rational value system through non-verbal experiences that are realistic and meaningful in the target area;

3. To develop a program which will provide stimuli for the development of fluency in language, symbolic thinking, and cognitive understanding in the target areas;

4. To develop a program which will provide for development of muscular coordination and sensory discrimination which is, in most cases, totally lacking among the target groups;

5. To develop a non-verbally oriented program whose primary emphasis is on the child's self-concept and which enhances intellectual development.

## EVALUATION OF PROJECT ERA

Presently, it appears that the evidence regarding the effectiveness of compensatory education is ambiguous.[12] However, it is still unascertainable as to whether the ambiguity is related to the ineffectiveness or inadequacy of the compensatory programs or of the evaluations. In either event, compensatory education programs bear the burden of justifying their existence.[13] It is becoming increasingly apparent that political, social, and economic forces are requiring more sophisticated evaluative and accountability studies as related to compensatory education.

The development of an educational program such as Project ERA requires consideration of many factors which may lead to success. Four essential factors which need to be considered in the development of such a program are: (1) selection and definition of objectives, (2) selection and planning of learning experiences related to the objectives, (3) organizing and implementing the learning experiences, and (4) evaluation.

The complexity of social-educational problems mirror the importance of evaluation in contemporary education. Stufflebeam states:

> If decision-makers are to make maximum, legitimate use of their opportunities, they must

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[12]Edward L. McDill, Mary S. McDill and J. Timothy Sprehe, Strategies for Success in Compensatory Education: An Appraisal of the Evaluation Research (Baltimore: John Hopkins Press, 1969), p. 55.

[13]Ibid., p. 71.

> make sound decisions regarding the alternatives available to them. To do this, they must know what alternatives are available, and be capable of sound judgements of the relevant merits of the alternatives.[14]

The quality of educational programs depends upon the quality of decisions made about the programs; the quality of decisions depends upon the decision-maker's ability to identify the alternatives which comprise decision situations, and to make sound judgements of those alternatives. Making sound judgements requires timely access to valid and reliable data pertaining to the alternatives, and the availability of such information requires a systematic means to provide it.[15]

The evaluation of Project ERA may be broadly defined as the collection and use of information/data to make decisions about a project.

> One very clear reason for evaluation is in order to judge the effectiveness of an educational program; evaluation is undertaken in order to improve the program. Thus, by knowing its strengths and weaknesses, as revealed by evaluation processes, decision-makers are enabled to plan more intelligently for its improvement.[16]

The goals of the Project ERA evaluation were to (1) determine

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[14]B. L. Stufflebeam, Evaluation and Enlightenment for Decision-Making (An Address Presented at ASCD, Sarasota, Florida, January, 1968).

[15]Ibid.

[16]C. Robert Pace, Evaluation Perspectives: 1968 (An Address Presented before the American Education Research Association: Pre-Session, Chicago, Illinois, February, 1968).

the success the Project achieved in meeting its stated objectives, and (2) provide a system whereby data is made available to Project decision-makers in order to improve the quality of the decisions to be made on future projects.

Procedures

It was shown in the introduction to this Report that Project ERA was divided into seven components. The evaluation report will provide data which is specifically related to the instructional program; all other components are discussed, where applicable, as they relate to the instructional program.

The primary objectives of Project ERA were evaluated through the use of standardized mental measurement tests, locally developed scales and checklists, standardized achievement tests, on-sight visitations, and an interview schedule with the professional staff of Project ERA --- Project Director, Project ERA teachers, and the central administrative staff of the Monongalia County Schools.

Objective No. 1. To change behavior by dealing with values that are self-defeating to the self-concept by culturally and economically deprived children.

In order to measure pupil progress in self-concept development, the Checklist for Clues to Self-Concept Development was administered by the Project ERA classroom teachers. Each Project ERA classroom teacher administered the Checklist at the end of four nine-week periods during the academic year 1969-70. The Checklist is displayed in Appendix A. The validation of this instrument is given in the Evaluation of Project ERA, 1967-68.[17]

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[17]David A. Puzzuoli, Evaluation of Project ERA, 1967-68 (Morgantown, W. Va.: West Virginia University, 1968), pp. 4-8.

Objective No. 2. To develop a rational value system through non-verbal experiences that are realistic and meaningful in the target area.

The Checklist for Clues to Self-Concept Development was used to determine if any changes had occurred in the value system held by the children. The administrative procedures as described in assessing Objective No. 1 were used in assessing Objective No. 2.

Objective No. 3. To develop a program which will provide stimuli for the development of fluence in language, symbolic thinking, and cognitive understanding in the target area.

The California Test of Mental Maturity and the California Achievement Test was utilized in measuring the development of Project ERA pupils as related to Objective No. 3.

Because of the diversity (grades 1 through 3) of pupils involved in Project ERA, it became necessary to use different levels of the California Test of Mental Maturity. For grade 1, the CTMM, 1963 Revision, Level 0, was administered; in grades 2 and 3, the CTMM, 1963 Revision, Level 1 was administered.

Two levels of the California Achievement Test were administered to the pupils. The Lower Primary, Form W, was administered in grades 1 and 2 and the Upper Primary, Form W, was administered to pupils in grades 3; both Forms of the CAT were the 1967 editions.

The CTMM and CAT were administered only as a post-test. This methodology allowed the children an opportunity for learning in the areas of reading, arithmetic, and language development prior to administering the paper and pencil instruments. This methodology is important when administering evaluative instruments to the first grade pupils in Project ERA. The authors were of the opinion that

a pre-test might unnecessarily subject disadvantaged pupils to a discouraging experience at the outset of the program.

Objective No. 4. To develop a program which will provide for development of muscular coordination and sensory discrimination which is, in most cases, totally lacking the target groups.

The development of muscular coordination and sensory discrimination was evaluated through the use of a modified form of N.C. Kephart's Perceptual Survey Rating Scale, see Appendix B. A pre-test, post-test design was used in the evaluation of Objective No. 4. The design was chosen for the purpose of determining longitudinal development of muscular coordination and control for the period under study.

Objective No. 5. To develop a non-verbally oriented program whose primary emphasis was on the child's self-concept and which enhances intellectual development.

The pupil's self-concept and intellectual development was measured through the use of the Checklist for Clues to Self-Concept Development, the California Test of Mental Maturity and the California Achievement Test. The manner in which these tests were administered has been described in the preceding paragraphs.

Evaluation Design

The primary design implemented for the evaluation of Project ERA was a longitudinal study. The performance of the Project ERA pupils were analyzed and observed as the pupils progressed from grades 1 through 3.

Data collected on the present Project ERA (1969-70) pupils was analyzed and compared to the performance of previous (1967-68,

1968-69) data. The data was also analyzed in terms of observable longitudinal trends and, where appropriate, compared with national norms.

Teacher Effectiveness

Whether one is concerned with the outcomes of a regular school program or with an educational program of a special nature such as Project ERA, teacher effectiveness emerges as a primary requisite for success.

The evaluation of teacher effectiveness in Project ERA was based upon direct observations of the on-going program. In addition to direct classroom observations, the authors conducted interviews with teachers, supervisors, and administrative staff members, relating to teacher effectiveness.

Educational Research and Field Services developed a Teacher Effectiveness Scale to aid in the evaluating the effectiveness of the teaching element in Project ERA. The Scale was designed and developed to evaluate the teaching element as related to the primary objective of Project ERA. The Scale is displayed in Appendix C.

Population

The Project ERA proposal required that the ratio of Head Start pupils to Non-Head Start pupils in each classroom be of approximately equally distributed between those pupils who had experienced Head Start and those pupils who had not experienced Head Start. Generally, Non-Head Start pupils were children whose families were considered either middle-class or above in social stratification.

The Project was designed for the integration of pupils from poor Appalachian homes with pupils from more affluent Appalachian homes.

The evaluation was conducted, basically, as a two-group design. The two groups consisted of Head Start and Non-Head Start pupils in each grade level. Each sub-group (Head Start, Non-Head Start) was exposed to the identical program components of Project ERA.

The Project ERA pupils had the advantage of teachers selected for their special interest in educational innovation and change. The Project ERA classrooms had special learning equipment which the pupils operated, physical education equipment, carpeting, emergency medical kits, aquariums, supplemental reading texts, and individual manipulative learning materials. The learning materials were selected for their qualities and capacities for assisting pupils in the transition from the pre-operative to the concrete stage of child development.

Project ERA pupils were served breakfast and lunch in an attempt to further control and enrich the environmental factors relevant to improving pupil learning. They also had the advantage of a family coordinator, a Project ERA nurse, a physical education specialist, a traveling art teacher, school social worker, school psychologist, and a traveling music teacher.

Each of the Project ERA classrooms was individually managed by different teachers. All of the teachers took part in in-service programs designed to bring about a degree of uniformity in methods

and procedures for organizing and implementing the learning experiences of Project ERA pupils.

Statistical Treatment

For purposes of statistical treatment, each grade level was divided into two sub-groups. One sub-group contained those pupils in each grade level who had experienced Head Start and the second sub-group contained those pupils in each grade level who had not experienced Head Start.

The primary statistical treatment used in this evaluation study were: the mean, standard deviation, t-test, and frequency counts. This evaluative report accepted significant differences at the 0.05 per cent level of confidence as significant; however, preference was given to those differences which were significant at the 0.01 per cent level of confidence. In addition, the evaluative study attempted to point out significant longitudinal or short term trends in the data as they appeared.

## COLLECTION OF DATA

This section of the report will present the raw data collected during the study. The design of the study was such that only group performance on the various instruments and/or scales was collected and subjected to statistical analysis. No attempt was made to record and/or analyze individual pupil or teacher performance on the various instruments and/or scales.

### Number of Pupils Enrolled

Project ERA was implemented in four elementary schools within the Monongalia County School System. The schools were Cassville, Jerome Park, National, and Second Ward.

Grade One. A total of 94 pupils were enrolled in the first grade classrooms of Project ERA. Approximately 61.7 per cent of the first grade pupils had experienced Head Start and 38.3 per cent of the first grade pupils had not experienced Head Start.

Grade Two. A total of 69 pupils were enrolled in the second grade classrooms of Project ERA. Approximately 50.7 per cent of the second grade pupils had experienced Head Start and 49.3 per cent of the pupils had not experienced Head Start.

Grade Three. A total of 55 pupils were enrolled in the third grade classrooms of Project ERA. Approximately 59.9 per cent of the pupils had experienced Head Start and 49.1 per cent of the pupils had not experienced Head Start.

It can be observed in Table I that a total of 218 pupils were enrolled in Project ERA, 1969-70; 121 of the pupils had experienced

TABLE I

NUMBER OF PUPILS ENROLLED, PER GRADE IN PROJECT ERA 1969-70

| School | Grade | Pupils Per Grade Head Start | Non Head Start | Total |
|---|---|---|---|---|
| Cassville | 1 | 16 | 9 | 25 |
| | 2 | 13 | 7 | 20 |
| | 3 | 8 | 10 | 18 |
| Jerome Park | 1 | 10 | 11 | 21 |
| | 2 | 10 | 13 | 23 |
| | 3 | 6 | 7 | 13 |
| National | 1 | 15 | 4 | 19 |
| | 2 | 7 | 1 | 8 |
| | 3 | 6 | 1 | 7 |
| Second Ward | 1 | 17 | 12 | 29 |
| Annex | 2 | 5 | 13 | 18 |
| Annex | 3 | 8 | 9 | 17 |
| Total | | 121 | 97 | 218 |

Head Start and 97 of the pupils had not experienced Head Start. Thus, it can be observed that approximately 55.5 per cent of the total pupil population in Project ERA, 1969-70, had experienced Head Start programs and approximately 44.5 per cent of the total pupil population had not experienced Head Start.

California Test of Mental Maturity

The California Test of Mental Maturity (Long Form), 1963 Revision, is a well-known test used to measure the functional capacities that are basic to learning, problem solving, and responding to new situations. In addition to assessing the development of an individual or group with reference to national performance standards at each age level, the CTMM results provide data as to the nature and potential of the abilities possessed by the individual.

The CTMM is divided into six (6) articulated levels to cover the grade and age range from pre-school to adult. To meet the evaluation objectives of this study, Level 0 (pre-primary) and Level 1 (primary) of the CTMM were administered. Both Level 0 and Level 1 consist of eleven (11) test units representing different mental exercises or abilities. Tests 1 through 6 and test 8 contribute to the non-language mental age and I.Q. Each of the seven (7) units present a minimum of verbal materials and measures a particular aspect of the pupil's mental capacities to items that require primarily the recognition or logical analysis of abstract relationships. The language section --- tests 7, 8, 9, 11 --- samples the ability to comprehend verbal and numerical concepts of various types and tests the extent and accuracy of recall.

The eleven test units are grouped according to five factors. These factors are: logical reasoning, spatial relationships, numerical reasoning, verbal concepts, and memory. It is within these factors that the sub-test units were grouped into verbal and non-verbal I.Q. determinations. The I.Q., as measured by the CTMM, is designed to provide a constant mean of 100 and a standard deviation of 16 I.Q. points for all age levels.

Tables II, III, and IV present the verbal, non-verbal and total I.Q. means and standard deviations achieved by the pupils in grades 1, 2, and 3, respectively.

Grade One. Table II presents a summary of the verbal, non-verbal, and total I.Q. means achieved by the pupils in grade one of Project ERA, 1969-70. It can be observed that the verbal, non-verbal, and total I.Q. means achieved by Head Start and Non-Head Start pupils tended to be higher than the national norms.

Grade Two. Table III presents a summary of the verbal, non-verbal, and total I.Q. means achieved by the pupils in grade two of Project ERA, 1969-70. It can be observed that the verbal, non-verbal, and total I.Q. means achieved by the Head Start pupils tended to be slightly lower than the expected means of 100; the Non-Head Start pupils achieved verbal, non-verbal, and total I.Q. means greater than the expected mean of 100.

Grade Three. Table IV presents a summary of the verbal, non-verbal, and total I.Q. means achieved by the pupils in grade three of Project ERA, 1969-70. It can be observed that both the Head Start and Non-Head Start pupils achieved verbal, non-verbal, and total I.Q.

TABLE II

I.Q. MEANS AND STANDARD DEVIATIONS FOR PROJECT ERA GRADE ONE, 1969-70, ON THE CALIFORNIA TEST OF MENTAL MATURITY, LONG FORM, LEVEL 0

| Group | N | Verbal I.Q. | Stand. Dev. | Non-Verbal I.Q. | Stand. Dev. | Total I.Q. | Stand. Dev. |
|---|---|---|---|---|---|---|---|
| Head Start | 51 | 103.57 | 16.36 | 105.43 | 14.30 | 105.73 | 14.32 |
| Non-Head Start | 27 | 114.52 | 11.70 | 112.93 | 16.80 | 116.11 | 13.70 |
| Total | 78 | 107.36 | 15.79 | 108.03 | 15.62 | 109.32 | 14.95 |

TABLE III

I. Q. MEANS AND STANDARD DEVIATIONS FOR PROJECT ERA GRADE TWO, 1969-70, ON THE CALIFORNIA TEST OF MENTAL MATURITY, LONG FORM, LEVEL 1

| Group | N | Verbal I.Q. | Stand. Dev. | Non-Verbal I.Q. | Stand. Dev. | Total I.Q. | Stand. Dev. |
|---|---|---|---|---|---|---|---|
| Head Start | 31 | 99.84 | 16.43 | 99.00 | 16.34 | 98.19 | 16.68 |
| Non-Head Start | 30 | 108.27 | 12.54 | 107.27 | 13.79 | 108.40 | 13.37 |
| Total | 61 | 103.98 | 15.24 | 103.06 | 15.74 | 103.21 | 15.97 |

TABLE IV

I.Q. MEANS AND STANDARD DEVIATIONS FOR PROJECT ERA GRADE THREE, 1969-70, ON THE CALIFORNIA TEST OF MENTAL MATURITY, LONG FORM, LEVEL 1

| Group | N | Verbal I.Q. | Stand. Dev. | Non-Verbal I.Q. | Stand. Dev. | Total I.Q. | Stand. Dev. |
|---|---|---|---|---|---|---|---|
| Head Start | 28 | 103.07 | 13.53 | 100.50 | 14.61 | 102.75 | 13.27 |
| Non-Head Start | 24 | 105.67 | 12.23 | 102.54 | 15.89 | 105.58 | 14.28 |
| Total | 52 | 104.76 | 12.97 | 101.44 | 15.24 | 104.05 | 13.81 |

means were equal to or greater than the expected mean of 100.

In general, a review of the data displayed in Tables II, III, and IV indicate that the means and standard deviations achieved by Project ERA pupils (Head Start and Non-Head Start) are within the acceptable limits one normally considers in interpreting these data. Although the means appeared to be, in general, slightly higher than the means from the national norm group, the standard deviations displayed in Tables II, III, and IV approach the standard deviations computed for the national norm group data. The data presented in Tables II, III, and IV, will be analyzed and discussed in greater detail in the following section of this report.

The California Achievement Test

The California Achievement Test, complete battery, (lower and upper primary), Form W, was administered to the pupils in grades 1, 2, and 3. The 1963 edition of the CAT was used in this evaluative study.

The CAT, lower primary and upper primary, is a series of comprehensive tests designed for the three-fold purpose of facilitating evaluation, educational measurement, and diagnosis. The CAT lower primary was used in the evaluation of the pupils in grades 1 and 2; it is composed of three sub-tests: (1) reading, (2) arithmetic, and (3) language. The test also yields a total battery score.

The upper primary level of the CAT was administered to pupils in grade 3; as with the lower primary level, the upper primary level is composed of three sub-tests: (1) reading, (2) arithmetic, and (3) language. The test also yields a total battery score.

For purposes of this study, the raw mean scores achieved by the pupils were converted to Grade Level Equivalent scores (GLE). Since the CAT was administered at the end of the academic year, the expected mean GLE was 1.9 for grade 1, 2.9 for grade 2, and 3.9 for grade 3. These data are displayed in Tables V, VI, and VII.

Grade One. Table V presents the mean Grade Level Equivalent achieved by the first grade pupils of Project ERA, 1969-70, in reading, arithmetic, language, and total grade equivalent scores as measured by the CAT.

The Head Start pupils achieved a mean GLE below the expected level of 1.9 in the areas of reading, and arithmetic. The language mean GLE for the Head Start pupils was 1.94 or slightly higher than the expected 1.9 mean GLE.

The Non-Head Start pupils of grade 1 achieved at or above the expected 1.9 mean GLE on all three sub-tests. It appears that the Non-Head Start pupils achieved their greatest success in the language sub-tests with a GLE of 2.3.

It may be interpreted that the Non-Head Start pupils were performing at 0.5 month above their expected Grade Level Equivalent in reading, 0.7 month above their expected Grade Level Equivalent in arithmetic, and 4.0 months above their expected Grade Level Equivalent in language.

The Head Start pupils achieved a Grade Level Equivalent of 1.7 months below the expected Grade Level Equivalent in reading, 1.6 months below the expected Grade Level Equivalent in arithmetic, and 0.04 month above the expected Grade Level Equivalent in language.

TABLE V

MEAN GRADE EQUIVALENT AND STANDARD DEVIATIONS FOR PROJECT ERA PUPILS, GRADE ONE, 1969-70 ON THE CALIFORNIA ACHIEVEMENT TEST

| Group | N | Reading | | Arithmetic | | Language | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | St. Dev. | Mean | St. Dev. | Mean | St. Dev. | Mean | St. Dev. |
| Head Start | 49 | 1.73 | 0.38 | 1.74 | 0.39 | 1.94 | 0.38 | 1.80 | 0.35 |
| Non-Head Start | 27 | 1.95 | 0.52 | 1.97 | 0.40 | 2.30 | 0.48 | 2.07 | 0.42 |
| Total | 76 | 1.80 | 0.44 | 1.82 | 0.40 | 2.06 | 0.45 | 1.89 | 0.39 |

TABLE VI

MEAN GRADE EQUIVALENT AND STANDARD DEVIATIONS FOR PROJECT ERA PUPILS, GRADE TWO, 1969-70 ON THE CALIFORNIA ACHIEVEMENT TEST

| Group | N | Reading | | Arithmetic | | Language | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | St. Dev. | Mean | St. Dev. | Mean | St. Dev. | Mean | St. Dev. |
| Head Start | 23 | 2.66 | 0.71 | 2.65 | 0.54 | 2.42 | 0.66 | 2.58 | 0.61 |
| Non-Head Start | 30 | 2.72 | 0.67 | 2.70 | 0.58 | 2.58 | 0.67 | 2.69 | 0.61 |
| Total | 53 | 2.69 | 0.68 | 2.67 | 0.56 | 2.51 | 0.67 | 2.64 | 0.61 |

TABLE VII

MEAN GRADE EQUIVALENT AND STANDARD DEVIATIONS FOR PROJECT ERA PUPILS, GRADE THREE, 1969-70 ON THE CALIFORNIA ACHIEVEMENT TEST

| Group | N | Reading | | Arithmetic | | Language | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | St. Dev. | Mean | St. Dev. | Mean | St. Dev. | Mean | St. Dev. |
| Head Start | 22 | 3.96 | 0.44 | 4.06 | 0.53 | 3.88 | 0.56 | 3.98 | 0.48 |
| Non-Head Start | 24 | 3.96 | 0.64 | 4.09 | 0.60 | 3.77 | 0.76 | 4.00 | 0.61 |
| Total | 46 | 3.96 | 0.55 | 4.07 | 0.56 | 3.82 | 0.67 | 3.99 | 0.55 |

As a total group, the data indicate that the pupils achieved a total mean Grade Level Equivalent in reading of 1.8 years or 1.0 month below the expected Grade Level Equivalent, the total arithmetic Grade Level Equivalent was 1.82 or 0.8 month below the expected Grade Level Equivalent and the achieved language mean Grade Level Equivalent was 2.06 or 1.6 months above the expected Grade Level Equivalent of 1.9.

Grade Two. Table VI presents the Mean Grade Level Equivalent achieved by the second grade pupils of Project ERA, 1969-70, in reading, arithmetic, language, and total Grade Level Equivalent scores as measured by the CAT.

The Head Start pupils achieved a mean GLE below the expected level of 2.9 in the areas of reading, arithmetic, and language. The Non-Head Start pupils achieved a mean GLE below the expected mean GLE of 2.9 on all three sub-tests --- reading, arithmetic, and language.

The data may be interpreted that the Non-Head Start pupils were performing at 1.8 months below their expected Grade Level Equivalent in reading, 2.0 months below their expected GLE in arithmetic, and 3.2 months below their expected GLE in language. The Head Start pupils achieved a GLE of 2.4 months below the expected GLE in reading, 2.5 months below the expected GLE in arithmetic, and 4.8 months below the expected GLE in language.

As a total group, the data indicate that the pupils achieved a total mean Grade Level Equivalent in reading of 2.69 or 2.1 months below the expected GLE, the total arithmetic GLE was 2.67 or 2.3 months below

the expected GLE and the achieved language mean GLE was 2.51 or 3.9 months below the expected GLE of 2.9.

Grade Three. Table VII presents the mean Grade Level Equivalent achieved by the third grade pupils of Project ERA, 1969-70, in reading, arithmetic, language, and total Grade Level Equivalent scores as measured by the CAT.

It can be observed that the mean Grade Level Equivalent achieved by the Head Start pupils was 3.96 or 0.6 month greater than the expected mean Grade Level Equivalent. The arithmetic mean Grade Level Equivalent of Head Start pupils in grade 3 was 4.06 or 1.6 months greater than the expected mean Grade Level Equivalent. The language mean Grade Level Equivalent of the Head Start pupils was 3.88 or 0.2 month below the expected mean Grade Level Equivalent.

The Non-Head Start pupils in grade three achieved a reading mean Grade Level Equivalent of 3.96 or 0.6 month greater than the expected mean Grade Level Equivalent. The achieved arithmetic mean GLE of the Non-Head Start pupils was 4.09 or 1.9 months greater than the expected mean GLE. The language mean GLE achieved by the Non-Head Start pupils was 3.77 or 1.3 months lower than the expected mean GLE.

It is interesting to note that the mean Grade Level Equivalent scores achieved in reading, arithmetic, and language for the Head Start and Non-Head Start pupils were approximately identical for each of the three sub-tests. Also, the Head Start pupils achieved a higher GLE in the language sub-test than did the Non-Head Start pupils in grade three.

As a total group, the data indicate that the pupils achieved a total mean GLE in reading of 3.96 or 0.6 month greater than the expected

GLE, the total arithmetic GLE was 4.07 or 1.7 months greater than the expected GLE and the achieved language mean GLE was 3.82 or 0.8 month below the expected GLE of 3.9.

Neuro-Muscular Test

A modified form of N. C. Kephart's Perceptual Survey Rating Scale was administered to the Project ERA pupils, 1969-70. The Neuro-Muscular Test (NMT) was administered by the physical education specialist in a pre-, post-test design for the first grade pupils. The NMT was administered to the pupils in grades 2 and 3 at the end of the academic year 1969-70.

The Neuro-Muscular Test is composed of six (6) sub-tests; they were (the numbers given in parentheses following the title of each sub-test is the maximum score the individual or group could have achieved on each sub-test): Drawing (3), Identification of Body Parts (48), Physical Achievements (42), Imitation of Movements (18), Ocular Pursuits (39), and Visual Achievements (9). The total maximum score the individual or group could have achieved was 159 points.

The NMT was administered to measure the developmental motor abilities of Project ERA pupils. The philosophy of the physical education program implemented in Project ERA provided that, in early childhood, mental and physical abilities are closely related, and motor abilities play a major role in intellectual development. The physical education program was not only a program of diagnosis but included corrective procedures also.

Grade One. Table VIII provides a summary of the mean scores

TABLE VIII

MEAN SCORES AND STANDARD DEVIATION ACHIEVED BY GRADE 1, 1969-70, HEAD START AND NON-HEAD START PUPILS, PRE-TEST AND POST TEST, NEURO-MUSCULAR TEST

| Student Group | N | Test | Sub-Test* | Mean | Standard Deviation |
|---|---|---|---|---|---|
| Head Start | 43 | Pre- | 1 | 1.47 | 0.74 |
| | | | 2 | 41.35 | 5.25 |
| | | | 3 | 20.98 | 6.87 |
| | | | 4 | 13.77 | 2.33 |
| | | | 5 | 34.98 | 6.56 |
| | | | 6 | 3.65 | 2.06 |
| | | | Total | 115.58 | 16.18 |
| Non-Head Start | 29 | Pre- | 1 | 1.21 | 0.56 |
| | | | 2 | 42.21 | 4.02 |
| | | | 3 | 19.71 | 5.05 |
| | | | 4 | 13.97 | 2.57 |
| | | | 5 | 35.66 | 6.43 |
| | | | 6 | 3.10 | 2.38 |
| | | | Total | 115.41 | 12.83 |
| Head Start | 52 | Post | 1 | 2.50 | 0.54 |
| | | | 2 | 47.62 | 1.21 |
| | | | 3 | 37.33 | 4.25 |
| | | | 4 | 17.42 | 0.70 |
| | | | 5 | 38.83 | 0.73 |
| | | | 6 | 6.58 | 2.19 |
| | | | Total | 149.00 | 6.56 |
| Non-Head Start | 22 | Post | 1 | 2.55 | 0.51 |
| | | | 2 | 47.73 | 1.28 |
| | | | 3 | 36.73 | 4.74 |
| | | | 4 | 17.73 | 0.55 |
| | | | 5 | 39.00 | 0.00 |
| | | | 6 | 7.18 | 1.53 |
| | | | Total | 149.95 | 6.54 |

*Sub-Test Identification: 1=Drawing, 2=Identification of Body Parts, 3=Physical Achievements, 4=Imitation of Movements, 5=Ocular Pursuits, 6=Visual Achievements

achieved by the first grade pupils in Project ERA, 1969-70. Table VIII displays the mean score for each sub-test and total mean score achieved during the pre-test and post-test administration of the NMT.

During pre-testing, the total mean score (115.58) achieved by the

Head Start pupils was approximately equal to the total mean score (115.41) achieved by the Non-Head Start pupils. During the post-testing, the Head Start pupils achieved a total mean score (149.00) approximately equal to the total mean score (149.95) achieved by the Non-Head Start pupils.

During pre-testing, the Head Start pupils achieved sub-test means approximately equal to the sub-test means achieved by the Non-Head Start pupils. This generalization also appears to hold true for the post-test administration of the NMT. There appears to be a difference in that the Head Start pupils exceeded the Non-Head Start pupils in Drawing, Physical Achievements, and Visual Achievements during the pre-testing. During the post-testing, the Head Start pupils achieved a sub-test mean which exceeded the Non-Head Start pupils in only one sub-test --- Physical Achievements.

An examination of the standard deviations indicates that there was greater homogeneity among the Head Start and Non-Head Start pupils in the post-test than there was in the pre-test. This would indicate, that as a group, the neuro-muscular development for both the Head Start and Non-Head Start pupils became more homogeneous as the year progressed.

A major factor in the increase in the homogeneity of the neuro-muscular development can be attributed to the excellent physical education program provided by Project ERA and the high quality of physical education instruction carried out in this component of the total Project.

Grade Two. Table IX presents the mean scores and standard deviations achieved by the Head Start and Non-Head Start pupils in grade two, 1969-70, on the NMT. The Head Start pupils achieved a lower mean score on all six sub-tests than did the Non-Head Start pupils. Further, the

TABLE IX

MEAN SCORE AND STANDARD DEVIATION ACHIEVED BY PROJECT ERA GRADE 2, 1969-70, HEAD START AND NON-HEAD START PUPILS ON THE NEURO-MUSCULAR TEST

| Student Group | N | Sub Test* | Mean | Stand. Dev. |
|---|---|---|---|---|
| Head Start | 27 | 1 | 2.41 | 0.50 |
| | | 2 | 47.74 | 1.16 |
| | | 3 | 36.93 | 8.50 |
| | | 4 | 17.70 | 0.78 |
| | | 5 | 38.52 | 1.40 |
| | | 6 | 7.56 | 1.97 |
| | | Total | 149.15 | 12.82 |
| Non-Head Start | 27 | 1 | 2.59 | 0.50 |
| | | 2 | 47.89 | 0.42 |
| | | 3 | 37.33 | 4.18 |
| | | 4 | 17.81 | 0.48 |
| | | 5 | 39.00 | 0.00 |
| | | 6 | 7.96 | 1.22 |
| | | Total | 151.30 | 5.81 |

TABLE X

MEAN SCORES AND STANDARD DEVIATION ACHIEVED BY PROJECT ERA GRADE 3, 1969-70, HEAD START NON-HEAD START PUPILS ON THE NEURO-MUSCULAR TEST

| Student Group | N | Sub Test* | Mean | Stand. Dev. |
|---|---|---|---|---|
| Head Start | 25 | 1 | 2.64 | 0.49 |
| | | 2 | 47.36 | 1.89 |
| | | 3 | 40.20 | 2.74 |
| | | 4 | 17.80 | 0.50 |
| | | 5 | 38.84 | 0.80 |
| | | 6 | 7.68 | 1.84 |
| | | Total | 153.48 | 5.08 |
| Non-Head Start | 25 | 1 | 2.72 | 0.46 |
| | | 2 | 47.76 | 0.83 |
| | | 3 | 39.92 | 3.15 |
| | | 4 | 17.64 | 0.70 |
| | | 5 | 39.00 | 0.00 |
| | | 6 | 8.04 | 1.24 |
| | | Total | 154.04 | 4.63 |

total mean score (149.15) achieved by the Head Start pupils was lower than the total mean score (151.30) achieved by the Non-Head Start pupils.

The standard deviations achieved by the Head Start pupils shows a lesser degree of homogeneity than the standard deviations achieved by the Non-Head Start pupils. The Head Start pupils achieved a total standard deviation of 12.82 and the Non-Head Start pupils achieved a total standard deviation of 5.81; a difference of approximately 5.00 standard deviation points between the two sub-groups.

Grade Three. Table X presents the mean scores and standard deviations achieved by the Head Start and Non-Head Start pupils in grade 3, 1969-70, on the NMT. It appears that both sub-groups (Head Start and Non-Head Start) were reaching the upper limits of the total mean score (159) and the mean scores possible in each of the sub-tests of the NMT.

It can be observed that the Head Start pupils achieved a higher mean on two sub-tests --- Physical Achievements, Imitation of Movements --- than did the Non-Head Start pupils. The Non-Head Start pupils achieved a total mean score of 154.04 and the Head Start pupils achieved a total mean score of 153.48.

The standard deviations achieved by the Head Start and Non-Head Start pupils indicate a high degree of homogeneity for the two sub-groups. The total standard deviation achieved by the Head Start pupils was 5.08 and the total standard deviation achieved by the Non-Head Start pupils was 4.63.

Checklist for Clues to Self-Concept Development

The Checklist for Clues to Self-Concept Development was developed

by Educational Research and Field Services, West Virginia University, and is a modification of several self-concept development scales reported in the professional literature. The Checklist was administered to pupils in Project ERA:1967-68, Project ERA:1968-69, and Project ERA:1969-70. Since its development and use, the Checklist has proven to be an excellent indicator and a reliable measure for the development of the self-concept.

For the objectives of this evaluation, the Checklist was administered four times during the academic year 1969-70. The Checklist was administered at the end of the ninth, eighteenth, twenty-seventh, and thirty-sixth week of the academic year 1969-70 to all pupils in Project ERA; the Checklist was administered by each Project ERA teacher. In order to insure a measure of uniformity in the administration of the Checklist, operational definitions for the Checklist were developed and appropriate numbers of Checklists were delivered to respective Project ERA teachers on the day before the evaluation was due. All Project ERA teachers received instruction in the administration of the Checklist.

The Checklist is composed of eight (8) factors related to self-concept development; these factors are: Social Participation, Social Acceptance, Social Concern for Others, Cooperation, Stability, Self-Appraisal, Degree of Independence, and Social Self-Perception.

For each of the eight (8) factors, the teacher is given a choice of four (4) options upon which she may rate the pupil. The options are presented in a hierarchy and were assigned an associated numerical value of one (1), the lowest possible ranking, to four (4), the highest possible ranking. The total maximum score possible was 32 points. The data is presented as a total mean score; the total mean score is composed of the

mean scores achieved on each factor.

The data retrieved from runs 1 and 4 were considered to be pre- and post-data, respectively. The data retrieved from runs 1, 2, 3, and 4 are displayed as profiles.

TABLE XI

SUMMARY OF THE MEANS AND STANDARD DEVIATIONS OF RUNS 1-4 OF THE CHECKLIST FOR CLUES TO SELF-CONCEPT DEVELOPMENT, FIRST GRADE, 1969-70

| Run | Group | N | Mean | Standard Deviation |
|---|---|---|---|---|
| 1 | Head Start | 54 | 21.04 | 4.53 |
| | Non-Head Start | 29 | 22.38 | 4.93 |
| | Total | 83 | 21.51 | 4.69 |
| 2 | Head Start | 64 | 21.08 | 4.00 |
| | Non-Head Start | 32 | 22.50 | 5.05 |
| | Total | 96 | 21.55 | 4.40 |
| 3 | Head Start | 51 | 22.94 | 3.28 |
| | Non-Head Start | 27 | 23.56 | 4.61 |
| | Total | 78 | 23.15 | 3.78 |
| 4 | Head Start | 52 | 23.37 | 3.86 |
| | Non-Head Start | 27 | 25.19 | 3.66 |
| | Total | 79 | 23.99 | 3.86 |

Grade One. Table XI is a summary of the total mean scores and standard deviations achieved by the Head Start and Non-Head Start pupils, first grade, in runs 1, 2, 3, and 4 of the administration of the Checklist. The data presented in Table XI shows that the total mean scores achieved by the Head Start pupils, in each run, were lower than the total mean scores achieved by the Non-Head Start pupils. The total mean scores achieved by the first grade pupils (Head Start and Non-Head Start) was 21.51, 21.55, 23.15, and 23.99 for runs 1, 2, 3, and 4, respectively.

Figure 1 is a graphical representation of the mean scores presented in Table XI. It can be observed that the Non-Head Start pupils and the Head Start pupils showed a continuous development in their self-concept as measured by the Checklist. The difference between the means of the Head Start pupils and the Non-Head Start pupils in run 1 was 1.34; the difference between the means in run 4 was 1.82.

Grade Two. Table XII presents a summary of the total means and standard deviations achieved by the second grade pupils in runs 1, 2, 3, and 4 of the Checklist. The pattern of Head Start total mean scores falling below the Non-Head Start total mean scores continued in the second grade. The pattern was originally exhibited in the first grade, 1967-68, and continued in the first and second grades in 1968-69. The total mean scores for grade 2 was 22.93, 23.06, 24.18, and 24.87 for runs 1, 2, 3, and 4, respectively.

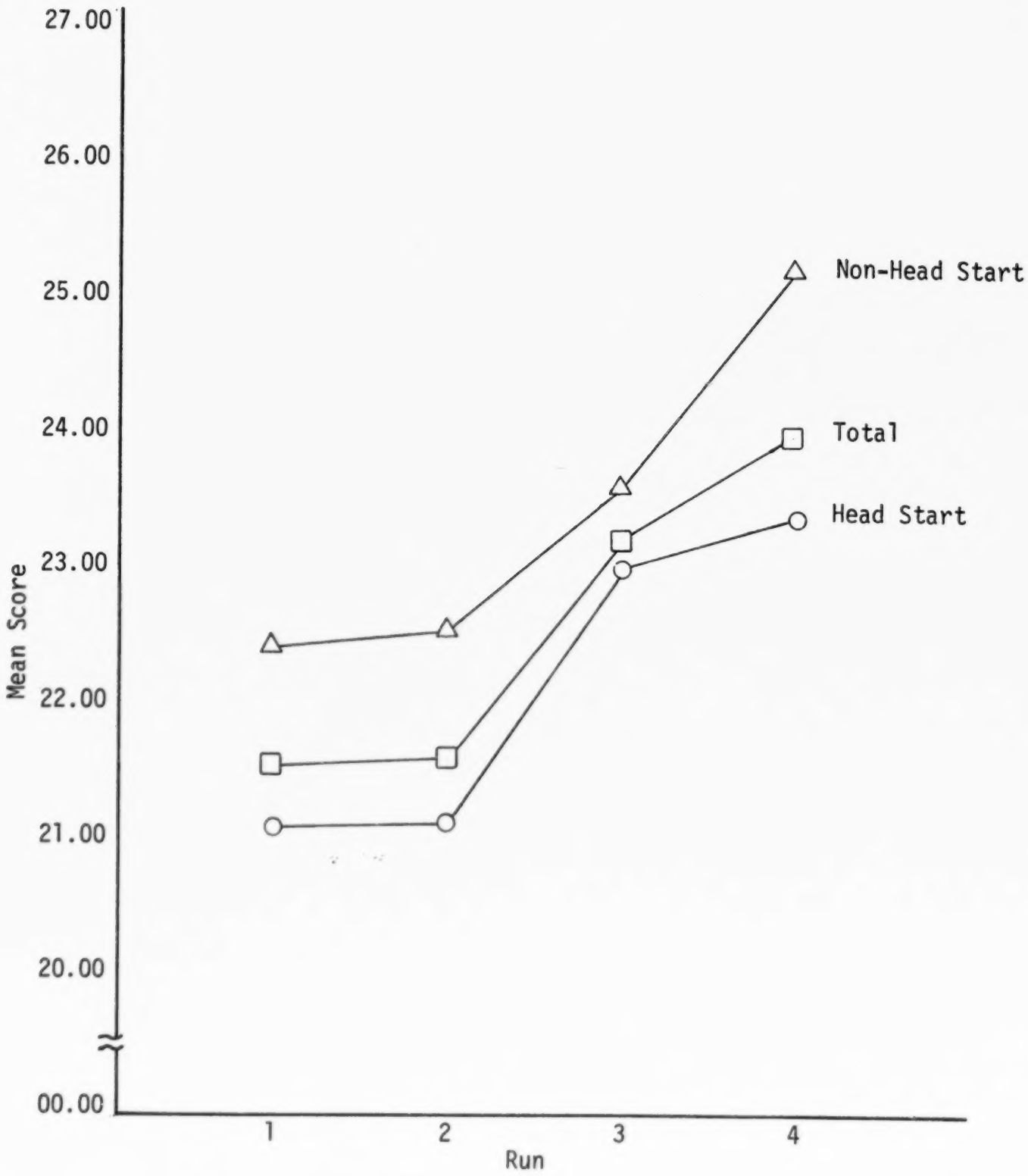


Figure 1

MEAN SCORES OF PROJECT ERA FIRST GRADE PUPILS VERSUS THE NUMBER OF RUNS AND THE CHECKLIST FOR CLUES TO SELF-CONCEPT DEVELOPMENT 1969-70

TABLE XII

SUMMARY OF THE MEANS AND STANDARD DEVIATIONS OF RUNS 1-4 OF THE CHECKLIST FOR CLUES TO SELF-CONCEPT DEVELOPMENT, SECOND GRADE, 1969-70

| Run | Group | N | Mean | Standard Deviation |
|---|---|---|---|---|
| 1 | Head Start | 33 | 21.52 | 5.72 |
| | Non-Head Start | 34 | 24.29 | 3.39 |
| | Total | 67 | 22.93 | 4.86 |
| 2 | Head Start | 34 | 21.12 | 5.98 |
| | Non-Head Start | 31 | 25.19 | 5.08 |
| | Total | 65 | 23.06 | 5.90 |
| 3 | Head Start | 35 | 23.00 | 5.49 |
| | Non-Head Start | 31 | 25.52 | 4.52 |
| | Total | 66 | 24.18 | 5.18 |
| 4 | Head Start | 34 | 23.56 | 5.28 |
| | Non-Head Start | 29 | 26.41 | 5.23 |
| | Total | 63 | 24.87 | 5.41 |

Figure 2 is a graphic representation of the data found in Table XII. A general rise in the self-concept development is evident in Figure 2. The difference in the means for the Non-Head Start pupils and the Head Start pupils is greater for run 4 than it was for run 1; the difference in run 4 was 2.85 and the difference in run 1 was 2.77.

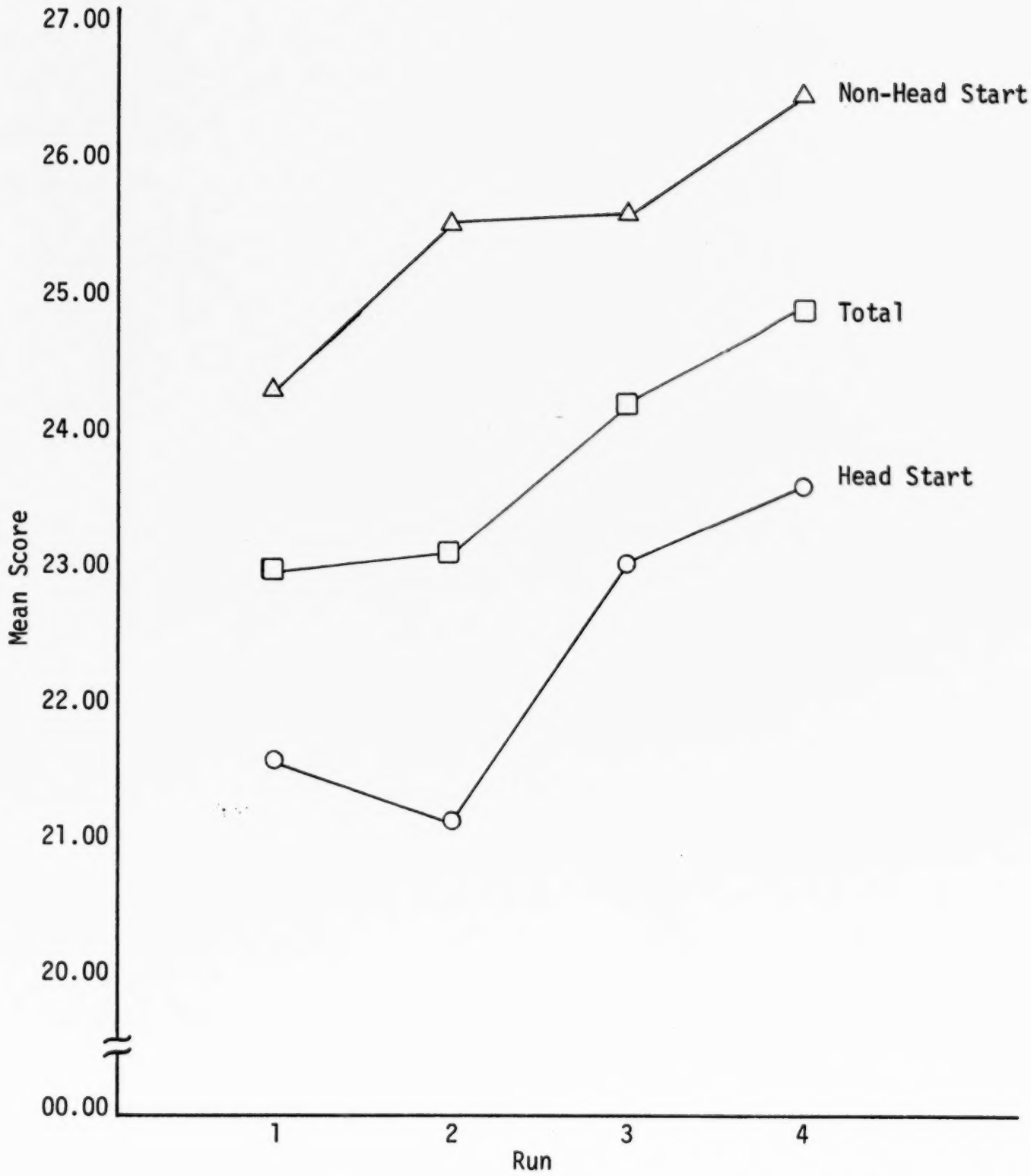


Figure 2

MEAN SCORES OF PROJECT ERA SECOND GRADE PUPILS VERSUS THE NUMBER OF RUNS AND THE CHECKLIST FOR CLUES TO SELF-CONCEPT DEVELOPMENT
1969-70

TABLE XIII

SUMMARY OF THE MEANS AND STANDARD DEVIATIONS OF RUNS 1-4 OF THE CHECKLIST FOR CLUES TO SELF-CONCEPT DEVELOPMENT, THIRD GRADE, 1969-70

| Run | Group | N | Mean | Standard Deviation |
|---|---|---|---|---|
| 1 | Head Start | 28 | 22.04 | 5.10 |
| | Non-Head Start | 25 | 24.64 | 5.80 |
| | Total | 53 | 23.26 | 5.54 |
| 2 | Head Start | 26 | 22.62 | 5.16 |
| | Non-Head Start | 28 | 23.04 | 5.32 |
| | Total | 54 | 22.83 | 5.20 |
| 3 | Head Start | 27 | 23.00 | 5.47 |
| | Non-Head Start | 23 | 23.61 | 5.65 |
| | Total | 50 | 23.28 | 5.50 |
| 4 | Head Start | 24 | 24.00 | 5.88 |
| | Non-Head Start | 28 | 24.79 | 5.15 |
| | Total | 52 | 24.42 | 5.46 |

Grade Three. Table XIII is a summary of the total mean scores and standard deviations achieved by the third grade pupils in runs 1, 2, 3, and 4 of the Checklist. As in grades 1 and 2, the third grade Head Start pupils achieved total mean scores consistently lower than the total mean scores achieved by the Non-Head Start pupils. Although the standard

deviations appear to be equal, the Head Start pupils standard deviations were lower in runs 1, 2, and 3. The Head Start pupils achieved a standard deviation greater than the standard deviation achieved by the Non-Head Start pupils during run 4.

Figure 3 is a graphical representation of the data found in Table XIII. Figure 3 is interesting from the standpoint that the Non-Head Start pupils actually scored lower on run 2 and 3 than they did on run number 1 during the administration of the Checklist. However, the Non-Head Start total mean scores remained higher than the Head Start total mean scores. The Head Start pupils in grade 3 showed a consistent positive development in their self-concept.

In relation to the differences found between the Head Start and Non-Head Start means during runs 1 and 4, it can be observed that the Head Start pupils closed the gap considerably. The difference between the mean scores of the Non-Head Start pupils and the Head Start pupils on run number 1 was 2.50 and the difference between the Head Start pupils and the Non-Head Start pupils on run number 4 was 0.79.

The longitudinal development of the pupil's self-concept will be presented in succeeding sections of this report. In addition, an analysis of Figures 1, 2, and 3 will be presented.

Teacher Effectiveness

Teacher effectiveness is a very difficult concept to measure. Prominent educators are not disposed to agree upon the factors which compose teacher effectiveness. In addition, there are no agreed upon standards as the criteria for measuring teacher effectiveness. At present, most measurement of teacher effectiveness is subjective and

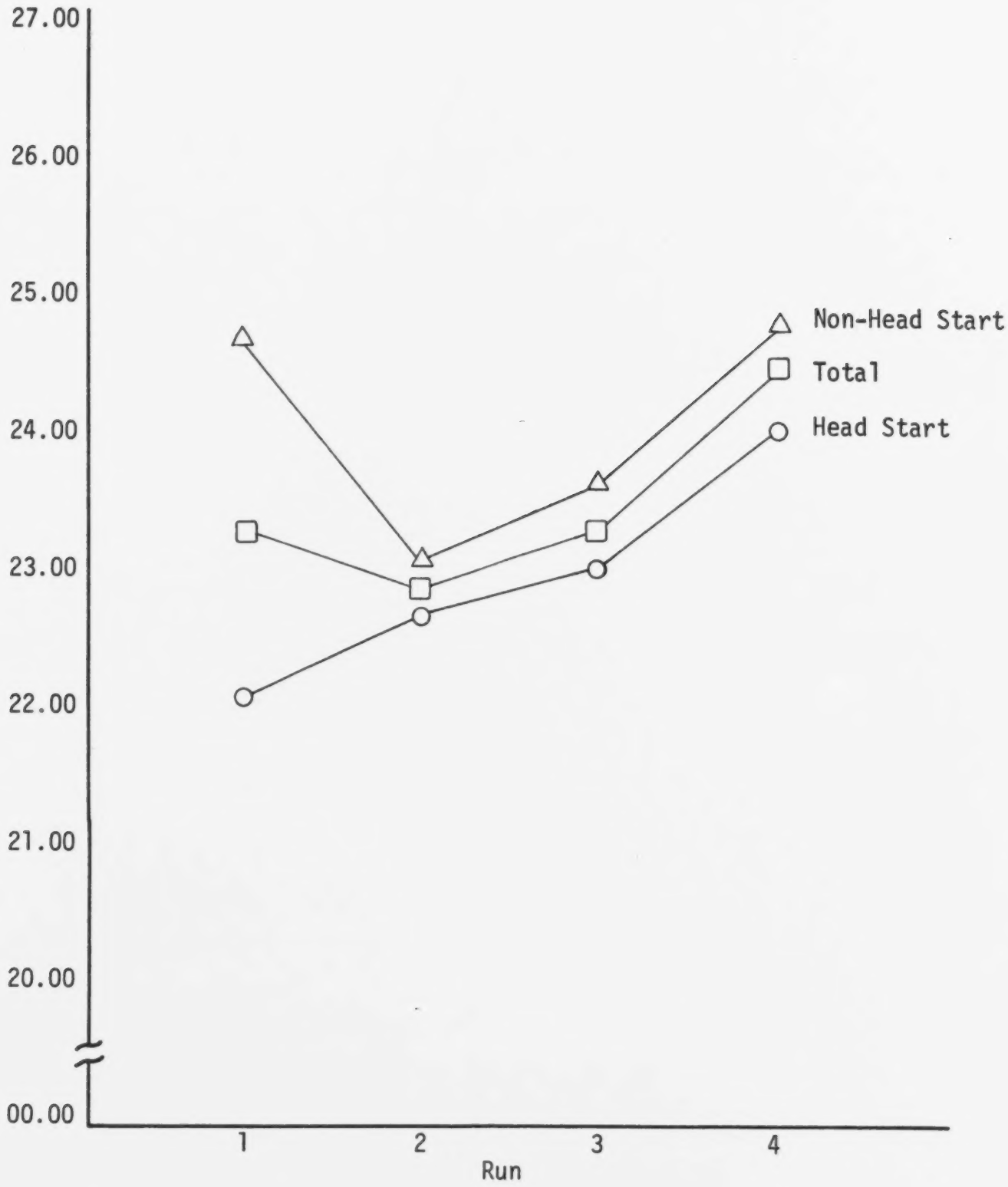


Figure 3

MEAN SCORES OF PROJECT ERA THIRD GRADE PUPILS VERSUS THE NUMBER OF RUNS AND THE CHECKLIST FOR CLUES TO SELF-CONCEPT DEVELOPMENT
1969-70

a product of the evaluator's perceptions.

The development of the Project ERA Teacher Effectiveness Scale considered the following factors: (1) philosophy of Project ERA, (2) objectives of Project ERA, (3) the role of the teacher in Project ERA, and (4) the behaviors Project ERA teachers should exhibit as related to the objectives of Project ERA.[18]

The Scale is composed of ten (10) factors, see Figure 4 and Appendix C. A random on-site visitation schedule was completed during the academic year 1969-70 for the purpose of evaluating each teacher at least three times. It should be emphasized at this point that the evaluation of teacher effectiveness was not concerned with evaluating individual teachers but with the total group teaching function. All on-site visits for the purpose of measuring teacher effectiveness was completed by the same evaluator to insure uniformity in the observations.

The results of the measurement of Project ERA teacher effectiveness is presented in Figure 4. Project ERA teachers scored above the mid-point on each of the ten factors. The Project ERA teachers achieved their highest mean score in factor 8, "Plans work so that all pupils may experience some success." The lowest group mean score was achieved in category 5, "Provides a wide variety of experiences to meet different individual as well as group purposes or goals."

The teacher effectiveness profile for the 1968-69 evaluation of Project ERA is also displayed in Figure 4. Although the 1968-69 Profile is higher on several factors than the 1969-70 Profile, it should not be interpreted that the Project ERA teachers, 1969-70, were performing below the 1968-69 teachers. The differences may be attributable to a shift in

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[18]David A. Puzzuoli, Evaluation of Project ERA, 1968-69 (Morgantown, W. Va.: West Virginia University, 1969), p. 28.

1. Keeps children interested.
2. Exhibits an interest in pupil response and/or questions.
3. Provides for the development of individual and/or group skills.
4. Allows or permits self-expression or exploration by the pupil.
5. Provides a wide variety of experiences to meet different individual as well as group purposes or goals.
6. Exhibits the ability to elicit and direct discussion.
7. Uses a variety of teaching aids in implementing learning experiences.
8. Plans work so that all pupils may experience some success.
9. Exhibits ability to encourage pupils to plan their school work.
10. Maintains a productive emotional climate in the classroom.

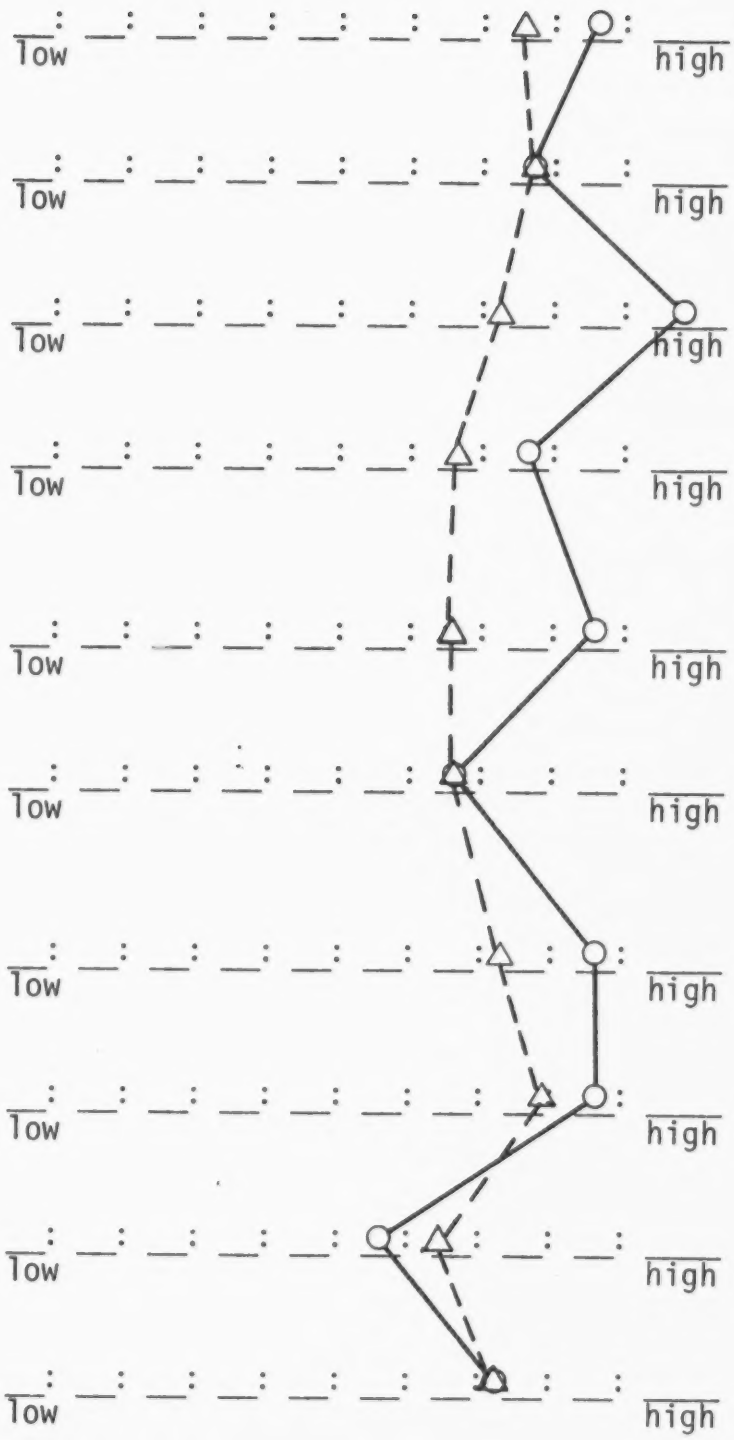


Figure 4

PROFILE OF MEAN SCORES ACHIEVED BY CLASSROOM TEACHERS ON PROJECT ERA TEACHER EFFECTIVENESS SCALE, 1968-69, 1969-70

_____ 1968-69

---------- 1969-70

the evaluator's perception, and the standard error of the mean.

The Project ERA teachers should be commended for their fine showing on the Scale during the past two years. The mean scores reflect the superb competencies of the majority of Project ERA teachers.

Classroom Environment

The physical environment of the Project ERA classrooms were, on the whole, inviting and psychologically stimulating to the pupils. During the on-site visits, the authors were able to observe individualized instruction, small group activities, and large group activities occurring at various time intervals throughout the school day. It was found, during many visits, that individualized instruction and small group instruction were occurring simultaneously within a classroom. Interactions between teacher and pupil, teacher-aide and pupil, and teacher-aide and teacher provided a productive and non-threatening climate in the classrooms.

The physical, sonic, and esthetic comforts of the pupil was aided by the placing of carpeting and appropriate movable furniture in the Project ERA classrooms. This allowed freedom of movement by the pupils without excessively disturbing the total classroom and a comfortable working environment.

Considering the deteriorating and outmoded conditions of most classrooms in the schools in which Project ERA was implemented, the Project ERA classrooms were better equipped and provided a more conducive atmosphere for learning. However, Project ERA classrooms leave much to be desired in the way of an ideal learning atmosphere.

Lighting in all Project ERA classrooms, as well as the other classrooms in the schools, was very poor. Heating and ventilation appeared to be a definite problem in all Project ERA classrooms, particularly, the classrooms at National school.

The outdoor play areas and indoor physical education spaces, where they existed, appeared inadequate or in a highly deteriorated condition. The outdoor play areas were either dusty or muddy, depending upon the weather conditions at the time. Outside maintenance of the play areas appeared to have not existed at all; most of the time these areas were cluttered with paper, trash, and other debris. It was to the distinct credit of the pupils and teachers of Project ERA that these facilities were utilized in a very commendable fashion even though the facilities were somewhat lacking when compared to optimum recreational and physical education facilities.

In summary, the authors feel that Project ERA has made a distinctive and much needed improvement in creating a wholesome learning environment. However, a concerted effort must be made by the community and the educational leaders of Monongalia County to build upon the foundations laid by Project ERA.

Teacher-Aides

The Project ERA teacher-aides were an integral part of the total learning environment. The teacher-aide occupied a responsible and relevant position in the total curriculum.

The teacher-aides appeared to be extremely competent in a number of instructional abilities and displayed considerable tact, initiative, and ingenuity in their relationships with the pupils. Some of the tasks

performed by the teacher-aides were: leading reading groups, supervising pupil play-time activities, transcribing pupil grades, checking worksheets, reading stories aloud to the pupils, and manipulating classroom hardware (listening stations, audio-visual equipment, and classroom furniture).

The direct involvement of the teacher-aide in the learning process was exemplified in the re-inforcement of pupil behavior, The teacher-aides were used to improve learning deficiencies and motivate the learner.

Special Teachers

Within the Project ERA instructional model, three (3) teachers functioned as special or "traveling teachers." The traveling teacher had the responsibility of making regularly scheduled visits to Project ERA classrooms for the purpose of providing instruction in music, art, and physical education.

Unlike the 1967-68 and 1968-69 evaluations of Project ERA, the traveling teachers were administered the Project ERA Teacher Effectiveness Scale. The authors determined that at this point in time in the Project ERA Program, the third year, the traveling teacher program should be developed to such a point that there would be little or no difference in their instructional methods and techniques from the classroom teacher. However, it should be noted, that with the exception of the physical education program the traveling teachers did not implement an individualized instructional program.

Although the materials and equipment for art and music were minimal, the authors believe that it would still be possible to implement the concept of individualized instruction, self-concept development, and

other concepts found in the objectives of Project ERA. The music and art traveling teachers performed below the means achieved by the total teacher group on all ten (10) categories of the Project ERA Teacher Effectiveness Scale.

Due to the relative inexperience of one of the traveling teachers, the effectiveness of the traveling teacher concept was somewhat retarded. The authors are of the opinion that only high quality, experienced teachers should be placed in these positions. It is difficult for new teachers to establish appropriate rapport in a normal classroom environment where she is faced with the same group of pupils everyday. It becomes most difficult to establish meaningful relationships when a teacher faces a class only once a week or less. The authors are of the opinion that the "traveling teacher concept" is sound and educationally correct but only high quality, professional teachers should be employed in these positions.

In summary, the traveling teachers in the Project ERA Program are considered a valuable asset in meeting the Project's objectives. The weaknesses discussed are not so overwhelming that they cannot be corrected. It is being suggested that a thorough re-assessment of the traveling teacher concept be made and appropriate steps taken. These steps might include: (1) a special in-service program for the traveling teacher, (2) employment of highly capable and professional personnel, and (3) a communications system which allows the traveling teacher to be more knowledgeable in pupil attitudes, aptitudes, and motivation.

Curriculum

The curricular model of Project ERA was developed to meet the

needs of individual pupils. The major subject matter areas of the curriculum were reading, arithmetic, language arts, fine arts (music and art), and physical education. These curricular areas are not uncommon in most primary school curricula. The key to the Project ERA curriculum was individualized instruction, or instruction designed to meet the needs of individual pupils.

Individualized instruction is a difficult concept to define and most difficult to implement under even the best of instructional environments. During the on-site visits of the on-going program, the authors attempted to determine not only the emphasis teachers placed in specific curricular areas but also attempted to note the method of utilizing individualized instructional techniques in each of the curricular areas.

In relation to specific subject matter emphasis, the authors were of the opinion that individual classroom teachers would stress and emphasize different subject matter areas. These actions added a dimension of inconsistency of the over-all curriculum of Project ERA. For example, reading was emphasized by a majority of the Project ERA teachers; however, other teachers appeared to emphasize arithmetic. This apparent lack of consistency in subject matter areas was not considered a major dysfunction in the curriculum. More importantly, it may be considered an asset in that teachers emphasized those subject matter areas which appeared to need strengthened in the learning experiences of specific classrooms.

The techniques of individualized instruction varied to a greater degree than did curricular emphasis. It became apparent that those

Project ERA teachers who had a strong belief and deep commitment to the objectives of Project ERA showed a tendency and desire to tailor instructional methods to meet the needs of individual pupils. Further, it appeared that those teachers who had at least two or three years of experience in Project ERA also showed a deeper commitment and desire to individualize instruction. There was a tendency of those teachers who were not deeply committed to the goals and objectives of Project ERA not to implement the individualization of instruction to a high degree.

Services

Project ERA provided three services to the pupils which were not normally supported by the Monongalia County School System. These pupil services were psychological, medical, and social.

Psychological. The psychological services for Project ERA pupils were provided through an external mental health agency on a contractual basis. The external agency accepted pupils recommended for consultation by Project ERA teachers. In addition to counseling with individual pupils, agents of the referral agency met with the teachers and families of pupils.

Agents of the psychological counseling service made on-site visits to Project ERA classrooms. The agents visited the classrooms at least once a week and during this time pupil referrals were made and followed through. The frequency of referrals were approximately 1 to 3 pupils at the beginning of the academic year and decreased to approximately 1 to 2 pupils at the end of the academic year. Typical referrals were the hyperactive pupil, the withdrawn pupil, the non-par-

ticipating pupil, and other types of pupil behavior which indicated a personality defect.

The evaluation of psychological services is difficult at best. Individual prescriptions for corrective activities often take longer than an academic year to show improvement. Further, it is most difficult to give a positive or negative indication to whether a specific child has been aided. The evaluation was complicated by the absence of a comprehensive and complete data collecting system. This same criticism can be made for the medical and social services components.

The incorporation of psychological services into Project ERA was designed for assisting children to develop their self-concept. Therefore, it can be assumed that through the assistance and consultation provided through the psychological services, the pupil's self-concept development was enriched and should be reflected in the data retrieved through the administration of the Checklist for Clues to Self-Concept Development.

Although the psychological services apparently was instrumental in the total success of Project ERA, there appears to be a major communications gap between the psychological services and the Project ERA teachers. A majority of the pupil referrals were initiated through the behavior of the psycyological counseling service agents. Further, there appears to be a need for the Project ERA teachers to obtain a broader knowledge base relating to the function and goals of psychological services to Project ERA.

Social Services. The Project employed a full-time family coordinator to assist in coordinating and implementing the social ser-

vices component of Project ERA. In addition, two (2) settlement houses were associated with the Project ERA.

Of the three special pupil services provided through Project ERA, social services appeared to have the least amount of coordination and direction. Further, it appeared that a greater and concerted effort must be exerted in the area of social services, especially, as related to parental involvement. During on-site visits to the cooperating settlement houses, the authors determined that parental attitude toward Project ERA was very positive. It appeared that where parental involvement was at a maximum, the parents were more concerned about the social, educational, and psychological development of their children.

Again, in relation to those parents who were involved in the Project, parental attitude toward school was developed in a positive direction. The parents felt that the individualized instruction and classroom atmosphere of Project ERA was a contributing factor to facilitating learning for their children. That is, the parents felt that the transition from home to school was made much easier due to the relaxed, open atmosphere of Project ERA.

Medical. Project ERA employed a full-time registered nurse. The primary responsibility of the medical service was: (1) dental and medical referrals, (2) visual testing, and (3) tuberculosis testing. The nurse followed up the noted medical referrals of the pupils. The medical program provided a physical examination for each pupil.

## ANALYSIS OF THE DATA

This section of the report presents the findings and/or observations obtained through statistical treatment of the data. The primary statistical treatment used in determining significant differences was the t-test.

The data was analyzed as a cross-sectional study and a longitudinal study. The cross-sectional data was considered as data collected for Project ERA pupils during 1969-70. Longitudinal data was data collected during 1967-68, 1968-69, and 1969-70. Where appropriate, data collected during the three academic years was compared to discern any changes in behavior or trends in behavior changes.

Comparisons for significant differences were made, primarily, between the sub-groups of Head Start and Non-Head Start pupils. Total group data was considered as the combined group behavior of the Head Start and Non-Head Start pupils in each grade level.

The 1967-68 Project ERA data was collected on first grade pupils only; the 1968-69 Project ERA data was collected on pupils in the first and second grades; the 1969-70 Project ERA data was collected on pupils in the first, second, and third grades. The 1968-69 Project ERA second grade held approximately 80 per cent of the 1967-68 Project ERA first grade pupils. The 1969-70 Project ERA third grade held approximately 66 per cent of the 1967-68 Project ERA first grade pupils. The 1969-70 Project ERA second grade held approximately 75 per cent of the 1968-69 first grade pupils. Thus, it can be assumed that the advance-

ment of pupils from grades 1 through 3 during the 3-years of Project ERA were approximately the identical group of pupils. The longitudinal data, as with cross-sectional data, considers only group behavior.

California Test of Mental Maturity

Grade One. Table XIV presents the mean scores and standard deviations achieved by the grade one pupils, 1969-70, in the non-verbal, verbal, and total I.Q. as measured by the CTMM. A t-value was calculated between the Head Start and Non-Head Start mean scores.

TABLE XIV

MEAN AND t-VALUES FOR PROJECT ERA GRADE ONE, 1969-70 ON SUB-TESTS AND TOTAL OF THE CALIFORNIA TEST OF MENTAL MATURITY, LONG FORM, LEVEL O

| Group | Area | N | Mean | Stand. Dev. | t | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Head Start | Non-Verbal | 51 | 105.43 | 14.30 | | | |
| Non-Head Start | | 27 | 112.93 | 16.80 | -1.97 | NO | No |
| Total | | 78 | 108.03 | 15.62 | | | |
| Head Start | Verbal | 51 | 103.57 | 16.36 | | | |
| Non-Head Start | | 27 | 114.52 | 11.70 | -3.40 | Yes | Yes |
| Total | | 78 | 107.10 | 15.79 | | | |
| Head Start | Total | 51 | 105.73 | 14.32 | | | |
| Non-Head Start | | 27 | 116.11 | 13.70 | -3.13 | Yes | Yes |
| Total | | 78 | 109.32 | 14.95 | | | |

No significant difference was found between the Head Start non-verbal mean score (105.43) and the Non-Head Start non-verbal mean score (112.93). A significant difference was found between the Head Start verbal mean score (103.57) and the Non-Head Start verbal mean score (114.52); the difference was found to be significant beyond the 0.01 level of significance. A significant difference was found between the Head Start total mean I.Q. (105.73) and the Non-Head Start total mean I.Q. (116.11); the difference was found to be significant beyond the 0.01 level of significance.

As was found in the 1967-68 and 1968-69 Project ERA evaluations for the first grade pupils, the Head Start pupils achieved non-verbal, verbal, and total I.Q. mean scores lower than the mean non-verbal, verbal, and total I.Q. scores achieved by the Non-Head Start pupils.

Grade Two. Table XV presents the mean scores achieved by the grade two pupils, 1969-70, in the non-verbal, verbal, and total I.Q. as measured by the CTMM. A t-value was calculated between the Head Start and Non-Head Start mean scores.

A significant difference was found between the Head Start, non-verbal mean score (95.00) and the Non-Head Start non-verbal mean score (100.27); the difference was found to be significant beyond the 0.01 level of significance. A significant difference was found between the Head Start verbal mean score (99.84) and the Non-Head Start verbal mean score (108.27); the difference was found to be significant at the 0.05 level of significance. A significant difference was found between the Head Start total I.Q. mean score (98.10) and the Non-Head

TABLE XV

MEAN AND t-VALUE FOR PROJECT ERA GRADE TWO, 1969-70 ON SUB-TESTS AND TOTAL OF THE CALIFORNIA TEST OF MENTAL MATURITY, LONG FORM, LEVEL 1

| Group | Area | N | Mean | Stan. Dev. | t | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Head Start | Non-Verbal | 31 | 95.00 | 16.35 | | | |
| Non-Head Start | | 30 | 107.27 | 13.79 | -3.17 | Yes | Yes |
| Total | | 61 | 101.03 | 16.33 | | | |
| Head Start | Verbal | 31 | 99.84 | 16.43 | | | |
| Non-Head Start | | 30 | 108.27 | 12.54 | -2.25 | No | Yes |
| Total | | 61 | 103.98 | 15.24 | | | |
| Head Start | Total | 31 | 98.10 | 16.68 | | | |
| Non-Head Start | | 30 | 108.40 | 13.79 | -2.64 | No | Yes |
| Total | | 61 | 103.03 | 16.09 | | | |

Start total mean I.Q. mean score (108.40); the difference was found to be significant at the 0.05 level of significance.

The tendency for Head Start pupils to score below the Non-Head Start pupils was apparent in grade two, 1969-70, and grade two, 1968-69. It appears that the pattern of Non-Head Start pupils achieving higher mean scores as measured by the CTMM, was firmly established in the first and second grades.

Grade Three. Table XVI presents the mean scores achieved by the grade 3 pupils, 1969-70, in the non-verbal, verbal, and total I.Q.

TABLE XVI

MEAN AND t-VALUES FOR PROJECT ERA GRADE THREE, 1969-70, ON SUB-TESTS AND TOTAL OF THE CALIFORNIA TEST OF MENTAL MATURITY, LONG FORM, LEVEL 1

| Group | Area | N | Mean | Stan. Dev. | t | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Head Start | Non-Verbal | 28 | 100.50 | 14.61 | | | |
| Non-Head Start | | 24 | 102.54 | 15.89 | -0.47 | No | No |
| Total | | 52 | 101.44 | 15.24 | | | |
| Head Start | Verbal | 28 | 103.07 | 13.53 | | | |
| Non-Head Start | | 24 | 105.67 | 12.23 | -0.72 | No | No |
| Total | | 52 | 104.27 | 13.01 | | | |
| Head Start | Total | 28 | 102.75 | 13.27 | | | |
| Non-Head Start | | 24 | 105.58 | 14.28 | -0.73 | No | No |
| Total | | 52 | 104.05 | 13.81 | | | |

as measured by the CTMM. A t-value was calculated between the Head Start and Non-Head Start mean scores.

The calculated t-values given in Table XVI were not found to be significant. That is, the Head Start and Non-Head Start pupils in grades three were not significantly different in their non-verbal, verbal, and total I.Q. as measured by the CTMM.

As in previous first and second grades, the third grade Head Start pupils scored lower than the Non-Head Start pupils in their non-verbal, verbal, and total mean I.Q.

Table XVII presents a summary of t-values for the total mean I.Q. scores between Head Start and Non-Head Start pupils on the California Test of Mental Maturity grade one, 1967-68, grade one, 1968-69, grade one 1969-70, grade two, 1968-69, grade two, 1969-70, and grade three 1969-70.

The pupils in grade one, 1967-68, in grade two, 1968-69, and in grade three, 1969-70, are approximately the same group of pupils and have experienced three years of Project ERA. It is apparent that no significant change was made in the total mean I.Q. of the Head Start and Non-Head Start pupils during the three years under investigation. Further, the pattern of Head Start pupils scoring below the Non-Head Start pupils was consistent throughout the three years. No significant differences were found between the total mean I.Q. scores of the Head Start and Non-Head Start pupils as they progressed from grade one through three.

The pupils in grade one, 1968-69, are relatively the same pupils in grade two, 1969-70. No significant difference was found between the total I.Q. mean score of the Head Start and Non-Head Start pupils during 1968-69. However, a significant difference, at the 0.05 level of significance, was found between the total mean I.Q. scores of Head Start and Non-Head Start pupils in grade two, 1969-70.

A t-value of 0.47 was calculated for the difference found between the 1968-69 Head Start, grade 1, total mean I.Q. (107.76) and the 1969-70 Head Start, grade 2, total mean I.Q. (98.19); the t-value was not found to be significant.

TABLE XVII

SUMMARY OF t-VALUES FOR THE TOTAL MEAN I.Q. SCORES BETWEEN HEAD START AND NON-HEAD START PUPILS ON THE CALIFORNIA TEST OF MENTAL MATURITY GRADE 1, 1967-68; GRADE 1, 1968-69; GRADE 1, 1969-70; GRADE 2, 1968-69; GRADE 2, 1969-70; GRADE 3, 1969-70

| Year | Grade | Group | N | Total I.Q. Mean | Stand. Dev. | t | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|---|
| 1967-68 | 1 | Head Start | 37 | 102.78 | 14.27 | | | |
| | | | | | | -0.46 | No | No |
| | | Non-Head Start | 32 | 104.59 | 18.11 | | | |
| 1968-69 | 1 | Head Start | 38 | 107.76 | 12.00 | | | |
| | | | | | | -1.39 | No | No |
| | | Non-Head Start | 39 | 112.36 | 16.76 | | | |
| 1969-79 | 1 | Head Start | 51 | 105.73 | 14.32 | | | |
| | | | | | | -3.13 | Yes | Yes |
| | | Non-Head Start | 27 | 116.11 | 13.70 | | | |
| 1968-69 | 2 | Head Start | 32 | 98.13 | 18.90 | | | |
| | | | | | | -0.03 | No | No |
| | | Non-Head Start | 37 | 98.24 | 18.28 | | | |
| 1969-70 | 2 | Head Start | 31 | 98.19 | 16.68 | | | |
| | | | | | | -2.64 | No | Yes |
| | | Non-Head Start | 30 | 108.40 | 13.79 | | | |
| 1969-70 | 3 | Head Start | 28 | 102.75 | 13.27 | | | |
| | | | | | | -0.73 | No | No |
| | | Non-Head Start | 24 | 105.58 | 14.28 | | | |

It is apparent that the total mean I.Q. score of both the Head Start and Non-Head Start pupils decreased during the second grade. These decreases and the significant differences found within the first grade, 1969-70, and the second grade, 1969-70, may be attributable to the standard error of the mean.

TABLE XVIII

MEAN GRADE EQUIVALENT AND t-VALUE GRADE ONE, 1967-68, ON THREE SUB-TESTS AND TOTAL BATTERY OF THE CALIFORNIA ACHIEVEMENT TEST

| Group | Sub Test | N | Mean | Stan. Dev. | t | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Head Start | Reading | 38 | 1.50 | 0.26 | | | |
| Non-Head Start | | 32 | 1.60 | 0.31 | -1.45 | No | No |
| Total | | 70 | 1.55 | 0.28 | | | |
| Head Start | Arithmetic | 38 | 1.47 | 0.30 | | | |
| Non-Head Start | | 32 | 1.59 | 0.38 | -1.42 | No | No |
| Total | | 70 | 1.52 | 0.36 | | | |
| Head Start | Language | 38 | 1.56 | 0.34 | | | |
| Non-Head Start | | 32 | 1.65 | 0.26 | -1.19 | No | No |
| Total | | 70 | 1.60 | 0.30 | | | |
| Head Start | Total | 38 | 1.50 | 0.24 | | | |
| Non-Head Start | | 32 | 1.60 | 0.29 | -1.54 | No | No |
| Total | | 70 | 1.55 | 0.25 | | | |

California Achievement Test

Table XVIII presents the mean Grade Level Equivalents achieved by the grade one pupils, 1967-68, on the CAT. The mean GLE's are given for each sub-test --- reading, arithmetic, language --- and the total battery. It can be observed that no significant differences existed between the Head Start GLE's and the Non-Head Start GLE's in each sub-test and total battery. All mean Grade Level Equivalents were below the expected mean Grade Level Equivalent of 1.90. The Head Start pupils scored below the Non-Head Start pupils in all measures of the CAT.

Table XIX presents the mean Grade Level Equivalents achieved by the grade one pupils, 1968-69, on the CAT. The mean scores are given for each sub-test --- reading, arithmetic, language --- and the total battery. It can be observed that significant differences were found between the mean GLE's achieved by the Head Start pupils (reading, arithmetic, and total battery) and the mean GLE's achieved by the Non-Head Start pupils. No significant difference was found between the Head Start mean GLE in language and the Non-Head Start GLE. Typically, the Head Start pupils achieved a GLE below the GLE achieved by the Non-Head Start pupils. Further, all mean Grade Level Equivalents were below the expected mean Grade Level Equivalent of 1.90.

Grade One. Table XX presents the mean Grade Level Equivalents achieved by grade one pupils, 1969-70, on the CAT. The mean Grade Level Equivalents are given for each sub-test and the total battery.

TABLE XIX

MEAN GRADE EQUIVALENT AND t-VALUES FOR GRADE ONE, 1968-69, ON THREE SUB-TESTS AND TOTAL BATTERY OF THE CALIFORNIA ACHIEVEMENT TEST

| Group | Sub Test | N | Mean | Stan. Dev. | t | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Head Start | Reading | 40 | 1.60 | 0.32 | | | |
| Non-Head Start | | 41 | 1.83 | 0.61 | -2.13 | No | Yes |
| Total | | 81 | 1.72 | 0.48 | | | |
| Head Start | Arithmetic | 40 | 1.64 | 0.29 | | | |
| Non-Head Start | | 41 | 1.85 | 0.49 | -2.26 | No | Yes |
| Total | | 81 | 1.75 | 0.40 | | | |
| Head Start | Language | 40 | 1.65 | 0.29 | | | |
| Non-Head Start | | 41 | 1.80 | 0.45 | -1.84 | No | No |
| Total | | 81 | 1.73 | 0.37 | | | |
| Head Start | Total | 40 | 1.62 | 0.21 | | | |
| Non-Head Start | | 41 | 1.79 | 0.46 | -2.05 | No | Yes |
| Total | | 81 | 1.70 | 0.40 | | | |

TABLE XX

MEAN GRADE EQUIVALENT AND t-VALUES FOR GRADE ONE, 1969-70, ON THREE SUB-TESTS AND TOTAL BATTERY OF THE CALIFORNIA ACHIEVEMENT TEST

| Group | Sub Test | N | Mean | Stand. Dev. | t | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Head Start | Reading | 49 | 1.73 | 0.38 | | | |
| Non-Head Start | | 27 | 1.95 | 0.52 | -1.95 | No | No |
| Total | | 76 | 1.80 | 0.44 | | | |
| Head Start | Arithmetic | 49 | 1.74 | 0.39 | | | |
| Non-Head Start | | 27 | 1.97 | 0.40 | -2.47 | No | Yes |
| Total | | 76 | 1.82 | 0.40 | | | |
| Head Start | Language | 49 | 1.94 | 0.38 | | | |
| Non-Head Start | | 27 | 2.30 | 0.48 | -3.37 | Yes | Yes |
| Total | | 76 | 2.06 | 0.45 | | | |
| Head Start | Total | 49 | 1.80 | 0.35 | | | |
| Non-Head Start | | 27 | 2.07 | 0.42 | -2.84 | Yes | Yes |
| Total | | 76 | 1.89 | 0.39 | | | |

The Head Start pupils consistently achieved GLE's below the GLE's achieved by the Non-Head Start pupils. The Non-Head Start pupils in grade one, 1969-70, achieved at or above the expected GLE of 1.90 in all measures of the CAT.

No significant difference was found between the Head Start GLE in reading and the Non-Head Start GLE. A significant difference

was found between the Head Start GLE in arithmetic and the Non-Head Start GLE in arithmetic; the calculated t-value was significant at the 0.05 level of significance. Significant differences were found between the Head Start and Non-Head Start GLE's in language, and total battery; the calculated t-values were found to be significant beyond the 0.01 level of significance.

TABLE XXI

MEAN GRADE EQUIVALENT AND t-VALUES FOR GRADE TWO, 1968-69, ON THREE SUB-TESTS AND TOTAL BATTERY OF THE CALIFORNIA ACHIEVEMENT TEST

| Group | Sub Test | N | Mean | Stan. Dev. | t | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Head Start | Reading | 37 | 2.16 | 0.68 | | | |
| Non-Head Start | | 36 | 2.41 | 0.77 | -1.49 | No | No |
| Total | | 73 | 2.28 | 0.75 | | | |
| Head Start | Arithmetic | 37 | 2.36 | 0.78 | | | |
| Non-Head Start | | 36 | 2.39 | 0.61 | -0.14 | No | No |
| Total | | 73 | 2.37 | 0.71 | | | |
| Head Start | Language | 37 | 2.33 | 0.65 | | | |
| Non-Head Start | | 36 | 2.47 | 0.73 | -0.84 | No | No |
| Total | | 73 | 2.40 | 0.68 | | | |
| Head Start | Total | 37 | 2.26 | 0.66 | | | |
| Non-Head Start | | 36 | 2.36 | 0.71 | -0.16 | No | No |
| Total | | 73 | 2.31 | 0.68 | | | |

Table XXI presents the mean Grade Level Equivalents achieved by the grade two pupils, 1968-69, on the CAT. The mean scores are given for each sub-test and the total battery. It can be observed that no significant differences existed between the Head Start and Non-Head Start pupils in each sub-test and total battery means. All mean Grade Level Equivalents were below the expected mean GLE of 2.90. The Head Start pupils achieved GLE's below the GLE's achieved by the Non-Head Start pupils.

TABLE XXII

MEAN GRADE EQUIVALENT AND t-VALUES FOR GRADE TWO, 1969-70, ON THREE SUB-TESTS AND TOTAL BATTERY OF THE CALIFORNIA ACHIEVEMENT TEST

| Group | Sub Test | N | Mean | Stan. Dev. | t | Significance .01 | .05 |
|---|---|---|---|---|---|---|---|
| Head Start | Reading | 23 | 2.66 | 0.71 | | | |
| Non-Head Start | | 30 | 2.72 | 0.67 | -0.32 | No | No |
| Total | | 53 | 2.69 | 0.68 | | | |
| Head Start | Arithmetic | 23 | 2.65 | 0.54 | | | |
| Non-Head Start | | 30 | 2.70 | 0.58 | -0.32 | No | No |
| Total | | 53 | 2.67 | 0.56 | | | |
| Head Start | Language | 23 | 2.42 | 0.66 | | | |
| Non-Head Start | | 30 | 2.58 | 0.67 | -0.85 | No | No |
| Total | | 53 | 2.51 | 0.67 | | | |
| Head Start | Total | 23 | 2.58 | 0.61 | | | |
| Non-Head Start | | 30 | 2.69 | 0.61 | -0.64 | No | No |
| Total | | 53 | 2.64 | 0.61 | | | |

Grade Two. Table XXII presents the mean Grade Level Equivalents achieved by grade two, 1969-70, on the CAT. The mean scores are given for each sub-test and the total battery. It can be observed that no significant differences existed between the Head Start and Non-Head Start pupils in each sub-test and total battery means. All mean Grade Level Equivalents were below the expected Grade Level Equivalent of 2.90. Typically, the Head Start pupils achieved a GLE below the GLE achieved by the Non-Head Start pupils.

Grade Three. Table XXIII presents the mean Grade Level Equivalents achieved by the grade three pupils, 1969-70, on the CAT. The mean scores are given for each sub-test and total battery. It can be observed that no significant difference existed between the Head Start and Non-Head Start pupils in each sub-test and total battery means. All mean Grade Level Equivalents achieved by the Head Start and Non-Head Start pupils either equaled or exceeded the expected GLE of 3.90. The pattern of Head Start pupils scoring consistently below the Non-Head Start pupils appears to be broken in the third grade pupils, 1969-70.

Table XXIV presents a summary of achieved total mean Grade Level Equivalents, standard deviations, and t-values for total Grade Level Equivalent, as measured by the CAT, between Head Start and Non-Head Start pupils. Several discernable trends for the three years under study are apparent in the data presented in Table XXIV.

It is apparent that with the possible exception of the grade three pupils, 1969-70, the Head Start pupils achieved GLE's below the GLE's achieved by the Non-Head Start pupils. The Head Start and Non-Head Start pupils in grade one (1967-68, 1968-69, 1969-70) and grade

TABLE XXIII

MEAN GRADE EQUIVALENT AND t-VALUES FOR GRADE THREE, 1969-70, ON THREE SUB-TESTS AND TOTAL BATTERY OF THE CALIFORNIA ACHIEVEMENT TESTS

| Group | Sub Test | N | Mean | Stan. Dev. | t | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Head Start | Reading | 22 | 3.96 | 0.44 | | | |
| Non-Head Start | | 24 | 3.96 | 0.64 | -0.00 | No | No |
| Total | | 46 | 3.96 | 0.55 | | | |
| Head Start | Arithmetic | 22 | 4.06 | 0.53 | | | |
| Non-Head Start | | 24 | 4.09 | 0.60 | -0.21 | No | No |
| Total | | 46 | 4.07 | 0.56 | | | |
| Head Start | Language | 22 | 3.88 | 0.56 | | | |
| Non-Head Start | | 24 | 3.77 | 0.76 | 0.51 | No | No |
| Total | | 46 | 3.82 | 0.67 | | | |
| Head Start | Total | 22 | 3.98 | 0.48 | | | |
| Non-Head Start | | 24 | 4.00 | 0.61 | -0.10 | No | No |
| Total | | 46 | 3.99 | 0.55 | | | |

TABLE XXIV

SUMMARY OF t-VALUES FOR TOTAL GRADE PLACEMENT EQUIVALENTS BETWEEN HEAD START AND NON-HEAD START PUPILS ON THE CALIFORNIA ACHIEVEMENT TEST GRADE 1, 1967-68; GRADE 1, 1968-69; GRADE 1, 1969-70; GRADE 2, 1968-69; GRADE 2, 1969-70; GRADE 3, 1969-70

| Year | Grade | Group | N | Means | Stand. Dev. | t | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|---|
| 1967-68 | 1 | Head Start | 38 | 1.50 | 0.24 | | | |
| | | | | | | 1.54 | No | No |
| | | Non-Head | 32 | 1.60 | 0.29 | | | |
| 1968-69 | 1 | Head Start | 40 | 1.62 | 0.21 | | | |
| | | | | | | 2.05 | No | No |
| | | Non-Head Start | 41 | 1.79 | 0.46 | | | |
| 1969-70 | 1 | Head Start | 49 | 1.80 | 0.35 | | | |
| | | | | | | -2.84 | Yes | Yes |
| | | Non-Head Start | 27 | 2.07 | 0.42 | | | |
| 1968-69 | 2 | Head Start | 37 | 2.26 | 0.66 | | | |
| | | | | | | 0.60 | No | No |
| | | Non-Head Start | 36 | 2.36 | 0.71 | | | |
| 1969-70 | 2 | Head Start | 23 | 2.58 | 0.61 | | | |
| | | | | | | -0.64 | No | No |
| | | Non-Head Start | 30 | 2.69 | 0.61 | | | |
| 1969-70 | 3 | Head Start | 22 | 3.98 | 0.48 | | | |
| | | | | | | -0.10 | No | No |
| | | Non-Head Start | 24 | 4.00 | 0.61 | | | |

two (1968-69, 1969-70) achieved mean Grade Level Equivalents below the expected mean Grade Level Equivalents. The pupils in grade three, 1969-70, both Head Start and Non-Head Start, achieved a total Grade Level Equivalent greater than the expected Grade Level Equivalent. These data appear to indicate that the Head Start pupils "caught" their Non-Head Start counterparts during the third year of Project ERA. This conclusion is supported by the calculated t-values between the Head Start and Non-Head Start total mean GLE's for grade 1 1967-68 (1.54), grade 2 1968-69 (0.60) and grade 3 1969-70 (0.10). Therefore, the assumption that the Head Start pupils were becoming more like the Non-Head Start pupils as measured by the CAT appears to be substantiated.

The trend in the reduction of the t-value calculated for difference in Grade Level Equivalents achieved by Head Start and Non-Head Start pupils is also found for the grade 1 pupils 1968-69 (2.05) and the grade 2 pupils 1969-70 (0.64).

Deviation of Achieved GLE from Expected GLE

Reference has been made to the fact that Project ERA was implemented over a three year period --- academic years 1967-68, 1968-69, and 1969-70. The California Achievement Test was administered during the ninth month of each academic year to the pupils in grade 1 (1967-68), grades 1 and 2 (1968-69), and grades 1, 2, and 3 (1969-70). During the administrations of the CAT, pupils in the respective grade levels achieved certain Grade Level Equivalents. The achieved Grade Level Equivalents were compared to the expected Grade Level Equivalents in

order to determine (1) differences between Head Start and Non-Head Start pupils, (2) performance of Head Start and Non-Head Start pupils in relation to a national norm, and (3) to determine any discernable trends between the deviation of the achieved GLE and the expected GLE.

Presented in Tables XXV through XXVIII are Grade Level Equivalents for reading, arithmetic, language, and total battery achieved by the Head Start and Non-Head Start pupils, 1967-70. A deviation is defined as the number of months an achieved Grade Level Equivalent either exceeded or fell short of the expected Grade Level Equivalent. For example, the first grade pupils, 1967-68, achieved a reading Grade Level Equivalent of 1.5; the expected mean reading Grade Level Equivalent was 1.9; therefore, the first grade pupils, 1967-68, had a deviation of -0.4 years or 4.0 months.

Reading. Table XXV presents the deviation of achieved Grade Level Equivalents from the expected Grade Level Equivalents in reading for Head Start and Non-Head Start pupils, 1967-70. The first grade Head Start pupils showed a deviation of -0.4 year during 1967-68, a -0.3 year deviation during 1968-69, and a -0.2 year deviation during 1969-70. The first grade Non-Head Start pupils showed a -0.3 year deviation during 1967-68, a -0.1 year deviation during 1968-69, and a +0.1 year deviation during 1969-70. There is an apparent trend for the deviation to become more positive in succeeding years of Project ERA implementation.

The trend for the deviation to become more positive is also exhibited in the two years in which Project ERA enrolled second grade

TABLE XXV

DEVIATION OF ACHIEVED GRADE LEVEL EQUIVALENT SCORES FROM THE EXPECTED GRADE LEVEL EQUIVALENT SCORES IN READING, 1967-70

| Grade Level (1) | 1967-68 Exp. GLE (2) | 1967-68 Ach. GLE (3) | 1967-68 Deviation (4) | 1968-69 Exp. GLE (5) | 1968-69 Ach. GLE (6) | 1968-69 Deviation (7) | 1969-70 Exp. GLE (8) | 1969-70 Ach. GLE (9) | 1969-70 Deviation (10) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Head Start | | | | | |
| 1 | 1.9 | 1.5 | -0.4 | 1.9 | 1.6 | -0.3 | 1.9 | 1.7 | -0.2 |
| 2 | --- | --- | --- | 2.9 | 2.1 | -0.8 | 2.9 | 2.7 | -0.2 |
| 3 | --- | --- | --- | --- | --- | --- | 3.9 | 4.0 | +0.1 |
| | | | | Non-Head Start | | | | | |
| 1 | 1.9 | 1.6 | -0.3 | 1.9 | 1.8 | -0.1 | 1.9 | 2.0 | +0.1 |
| 2 | --- | --- | --- | 2.9 | 2.4 | -0.5 | 2.9 | 2.7 | -0.2 |
| 3 | --- | --- | --- | --- | --- | --- | 3.9 | 4.0 | +0.1 |

pupils, 1968-69 and 1969-70. There is also an indication that during the first year of Project ERA, the deviation reaches its greatest negative value.

The deviations recorded in column 10 of Table XXV indicate that during the third year of Project ERA the Head Start and Non-Head Start pupils exhibited equal deviations. That is, the Head Start and Non-Head Start pupils achieved a reading Grade Level Equivalent of 4.0 during the third year of Project ERA; the achieved GLE exceeded the expected GLE by one (1) month.

Arithmetic. Table XXVI presents the deviations of achieved Grade Level Equivalents from the expected Grade Level Equivalents for Head Start and Non-Head Start pupils in arithmetic, 1967-70. The first grade Head Start pupils showed a deviation of -0.4 year during 1967-68, a deviation of -0.3 year during 1968-69, and a deviation of -0.2 year during 1969-70. The first grade Non-Head Start pupils showed a deviation of -0.3 years during 1967-68, a deviation of 0.0 years during 1968-69, and a +0.1 year deviation during 1969-70. It is apparent that during the three years under study, the deviations for the first grade pupils became more positive as the number of years of Project ERA implementation increased.

The trend of achieving a more positive deviation as the number of years increased for Project ERA implementation is also exhibited for the Head Start and Non-Head Start pupils in grade two, 1968-69 and 1969-70.

Column 10, Table XXVI, provides data which indicates that the

TABLE XXVI

DEVIATION OF ACHIEVED GRADE LEVEL EQUIVALENT SCORES FROM THE EXPECTED GRADE LEVEL EQUIVALENT SCORES IN ARITHMETIC, 1967-70

| Grade Level (1) | 1967-68 Exp. GLE (2) | 1967-68 Ach. GLE (3) | 1967-68 Deviation (4) | 1968-69 Exp. GLE (5) | 1968-69 Ach. GLE (6) | 1968-69 Deviation (7) | 1969-70 Exp. GLE (8) | 1969-70 Ach. GLE (9) | 1969-70 Deviation (10) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Head Start | | | | | |
| 1 | 1.9 | 1.5 | -0.4 | 1.9 | 1.6 | -0.3 | 1.9 | 1.7 | -0.2 |
| 2 | --- | --- | --- | 2.9 | 2.4 | -0.5 | 2.9 | 2.7 | -0.2 |
| 3 | --- | --- | --- | --- | --- | --- | 3.9 | 4.1 | +0.2 |
| | | | | Non-Head Start | | | | | |
| 1 | 1.9 | 1.6 | -0.3 | 1.9 | 1.9 | 0.0 | 1.9 | 2.0 | +0.1 |
| 2 | --- | --- | --- | 2.9 | 2.4 | -0.5 | 2.9 | 2.7 | -0.2 |
| 3 | --- | --- | --- | --- | --- | --- | 3.9 | 4.1 | +0.2 |

Head Start and Non-Head Start pupils achieved a +0.2 year deviation during the third year of Project ERA. That is, the mean arithmetic GLE achieved by the Head Start pupils equaled the mean arithmetic GLE achieved by the Non-Head Start pupils during the third year of Project ERA. Each sub-group achieved a GLE of 4.1; the GLE exceeded the expected GLE by 2.0 months.

Language. Table XXVII presents the deviation of achieved Grade Level Equivalents from the expected Grade Level Equivalents in language, 1967-70. The data presented in Table XXVII shows the identical trends exhibited in the data presented in Tables XXV and XXVI. The first grade Head Start pupils achieved a language Grade Level Equivalent which deviated from the expected Grade Level Equivalent by -0.3 years in 1967-68, by -0.2 years during 1968-69, and by 0.0 years during 1969-70. The first grade Non-Head Start pupils in 1967-68 achieved a language Grade Level Equivalent which deviated from the expected Grade Level Equivalent by -0.2 years, by -0.1 year during 1968-69, and by +0.4 years during 1969-70.

The data presented in column 10, Table XXVII, indicate that the third grade pupils achieved a GLE equal to the expected GLE. The Non-Head Start pupils in the third grade achieved a language GLE of 3.8; the achieved GLE deviated by -0.1 years.

Total Grade Equivalent. Table XXVIII presents the deviation of achieved Grade Level Equivalents from the expected Grade Level Equivalents on the total battery of the California Achievement Test, 1967-70. The total battery Grade Level Equivalent is mathematically related to pupil

TABLE XXVII

DEVIATION OF ACHIEVED GRADE LEVEL EQUIVALENT SCORES FROM THE EXPECTED GRADE LEVEL EQUIVALENT SCORES IN LANGUAGE, 1967-70

| Grade Level (1) | 1967-68 Exp. GLE (2) | 1967-68 Ach. GLE (3) | 1967-68 Deviation (4) | 1968-69 Exp. GLE (5) | 1968-69 Ach. GLE (6) | 1968-69 Deviation (7) | 1969-70 Exp. GLE (8) | 1969-70 Ach. GLE (9) | 1969-70 Deviation (10) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Head Start | | | | | |
| 1 | 1.9 | 1.6 | -0.3 | 1.9 | 1.7 | -0.2 | 1.9 | 1.9 | 0.0 |
| 2 | --- | --- | | 2.9 | 2.3 | -0.6 | 2.9 | 2.4 | -0.5 |
| 3 | --- | --- | | --- | --- | --- | 3.9 | 3.9 | 0.0 |
| | | | | Non-Head Start | | | | | |
| 1 | 1.9 | 1.7 | -0.2 | 1.9 | 1.8 | -0.1 | 1.9 | 2.3 | +0.4 |
| 2 | --- | --- | --- | 2.9 | 2.5 | -0.4 | 2.9 | 2.6 | -0.3 |
| 3 | --- | --- | --- | --- | --- | --- | 3.9 | 3.8 | -0.1 |

TABLE XXVIII

DEVIATION OF ACHIEVED GRADE LEVEL EQUIVALENT SCORES FROM THE EXPECTED GRADE LEVEL EQUIVALENT SCORES, TOTAL CAT, 1967-70

| Grade Level (1) | 1967-68 Exp. GLE (2) | 1967-68 Ach. GLE (3) | 1967-68 Deviation (4) | 1968-69 Exp. GLE (5) | 1968-69 Ach. GLE (6) | 1968-69 Deviation (7) | 1969-70 Exp. GLE (8) | 1969-70 Ach. GLE (9) | 1969-70 Deviation (10) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Head Start | | | | | |
| 1 | 1.9 | 1.5 | -0.4 | 1.9 | 1.6 | -0.3 | 1.9 | 1.8 | -0.1 |
| 2 | --- | --- | --- | 2.9 | 2.3 | -0.6 | 2.9 | 2.6 | -0.3 |
| 3 | --- | --- | --- | --- | --- | --- | 3.9 | 4.0 | +0.1 |
| | | | | Non-Head Start | | | | | |
| 1 | 1.9 | 1.6 | -0.3 | 1.9 | 1.8 | -0.1 | 1.9 | 2.1 | +0.2 |
| 2 | --- | --- | --- | 2.9 | 2.4 | -0.5 | 2.9 | 2.7 | -0.2 |
| 3 | --- | --- | --- | --- | --- | --- | 3.9 | 4.0 | +0.1 |

achievement on each sub-test of the CAT. Therefore, pupil behavior on the sub-tests is reflected in the pupil behavior summarized in the total battery score. As expected, the trends exhibited in Tables XXV through XXVII is mirrored in Table XXVIII.

Summary. The data presented in Tables XXV through XXVIII present significant and discernable trends relating to the primary objectives of follow-through programs in general and Project ERA, specifically. In terms of the abilities and understandings measured by the California Achievement Test, it appears that:

1. Project ERA requires at least three (3) years before the learning disadvantages of rural Appalachian children can be overcome;

2. The curriculum and teaching methodology of Project ERA requires at least three (3) years for total development before they affect the learning behaviors of rural Appalachian children;

3. Appalachian Head Start pupils require an experiential period of three (3) years in Project ERA before they appear to equal the learning levels of their Non-Head Start counterparts.

Neuro-Muscular Test

Grade One. Tables XXIX through XXXII present data retrieved through the administration of the Neuro-Muscular Test administered to the first grade pupils, 1969-70, in a pre-test, post-test design.

Table XXIX presents the pre-test sub-test and total means, standard deviations, and calculated t-values achieved by the Head Start and Non-Head Start pupils in grade one, 1969-70. The calculated t-values indicate that no significant differences were found between the Head Start pupils and the Non-Head Start pupils in

TABLE XXIX

MEAN, STANDARD DEVIATION AND t-VALUE FOR HEAD START VERSUS NON-HEAD START PUPILS OF GRADE 1, 1969-70: SUB-TEST, PRE TEST, NEURO-MUSCULAR TEST

| Student Group | Sub Test* | N | Mean | Stand. Dev. | t Value | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Head Start | 1 | 43 | 1.47 | 0.74 | 1.67 | No | No |
| Non-Head Start | | 29 | 1.21 | 0.56 | | | |
| Head Start | 2 | 43 | 41.35 | 5.25 | -0.77 | No | No |
| Non-Head Start | | 29 | 42.21 | 4.02 | | | |
| Head Start | 3 | 43 | 20.98 | 6.87 | 1.27 | No | No |
| Non-Head Start | | 29 | 19.17 | 5.05 | | | |
| Head Start | 4 | 43 | 13.77 | 2.33 | -0.33 | No | No |
| Non-Head Start | | 29 | 13.97 | 2.57 | | | |
| Head Start | 5 | 43 | 34.98 | 6.56 | -0.43 | No | No |
| Non-Head Start | | 29 | 35.66 | 6.43 | | | |
| Head Start | 6 | 43 | 3.65 | 2.06 | 0.99 | No | No |
| Non-Head Start | | 29 | 3.10 | 2.38 | | | |
| Head Start | Total | 43 | 115.58 | 16.18 | 0.05 | No | No |
| Non-Head Start | | 29 | 115.41 | 12.83 | | | |

*Sub-Test Identification: 1=Drawing, 2=Identification of Body Parts, 3=Physical Achievement, 4=Imitation of Movements, 5=Ocular Pursuits, 6=Visual Achievements

Drawing, Identification of Body Parts, Physical Achievement, Imitation of Movements, Ocular Pursuits, and Visual Achievements during the pre-test administration of the NMT. As expected, no significant difference was found between the total means achieved by the Head Start and Non-Head Start pupils during the pre-test administration of the NMT.

Table XXX presents the means, standard deviations, and calculated t-values the Head Start pupils in grade one, 1969-70, achieved during the pre-test and post-test administration of the NMT. The t-values were calculated to determine if there was a significant difference between the pre-test and post-test means achieved by the Head Start pupils in each sub-test and total test behavior. It can be observed that the first grade Head Start pupils had a significant growth in motor development as measured by the NMT; the growth in motor development was significant beyond the 0.01 level of significance.

Table XXXI presents the means, standard deviations, and calculated t-values for the Non-Head Start pupils of grade one, 1969-70, achieved during the pre-test and post-test administration of the NMT. The t-values were calculated to determine if there was a significant difference in the pre-test and post-test means achieved by the Non-Head Start pupils in each sub-test and total test behavior. It can be observed that the first grade Non-Head Start pupils had a significant growth in their motor development as measured by the NMT; the growth in motor development was significant beyond the 0.01 level of significance.

TABLE XXX

MEAN, STANDARD DEVIATION AND t-VALUE FOR HEAD START PUPILS OF GRADE 1, 1969-70: PRE-TEST AND POST-TEST, NEURO-MUSCULAR TEST

| Test | Sub Test* | N | Mean | Stand. Dev. | t Value | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Pre | 1 | 43 | 1.47 | 0.74 | -7.58 | Yes | Yes |
| Post | | 52 | 2.50 | 0.54 | | | |
| Pre | 2 | 43 | 41.35 | 5.25 | -7.57 | Yes | Yes |
| Post | | 52 | 47.62 | 1.21 | | | |
| Pre | 3 | 43 | 20.98 | 6.87 | -13.45 | Yes | Yes |
| Post | | 52 | 37.33 | 4.25 | | | |
| Pre | 4 | 43 | 13.77 | 2.33 | -9.82 | Yes | Yes |
| Post | | 52 | 17.42 | 0.70 | | | |
| Pre | 5 | 43 | 34.98 | 6.56 | -3.79 | Yes | Yes |
| Post | | 52 | 38.83 | 0.73 | | | |
| Pre | 6 | 43 | 3.65 | 2.06 | -6.63 | Yes | Yes |
| Post | | 52 | 6.58 | 2.19 | | | |
| Pre | Total | 43 | 115.58 | 16.18 | -12.56 | Yes | Yes |
| Post | | 52 | 149.00 | 6.56 | | | |

*Sub-Test Identification: 1=Drawing, 2=Identification of Body Parts, 3=Physical Achievements, 4=Imitation of Movements, 5=Ocular Pursuits, 6=Visual Achievements.

TABLE XXXI

MEAN, STANDARD DEVIATION AND t-VALUE FOR NON-HEAD START PUPILS OF GRADE 1, 1969-70: PRE-TEST AND POST-TEST, NEURO-MUSCULAR TEST

| Test | Sub Test* | N | Mean | Stand. Dev. | t Value | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Pre | 1 | 29 | 1.21 | 0.56 | -8.72 | Yes | Yes |
| Post | | 22 | 2.55 | 0.51 | | | |
| Pre | 2 | 29 | 42.21 | 4.02 | -6.82 | Yes | Yes |
| Post | | 22 | 47.73 | 1.28 | | | |
| Pre | 3 | 29 | 19.17 | 5.05 | -12.47 | Yes | Yes |
| Post | | 22 | 36.73 | 4.74 | | | |
| Pre | 4 | 29 | 13.97 | 2.57 | -7.52 | Yes | Yes |
| Post | | 22 | 17.73 | 0.55 | | | |
| Pre | 5 | 29 | 35.66 | 6.43 | -2.75 | Yes | Yes |
| Post | | 22 | 39.00 | 0.00 | | | |
| Pre | 6 | 29 | 3.10 | 2.38 | -7.28 | Yes | Yes |
| Post | | 22 | 7.18 | 1.53 | | | |
| Pre | Total | 29 | 115.41 | 12.83 | -12.27 | Yes | Yes |
| Post | | 22 | 149.95 | 6.54 | | | |

*Sub-Test Identification: 1=Drawing, 2=Identification of Body Parts, 3=Physical Achievements, 4=Imitation of Movements, 5=Ocular Pursuits, 6=Visual Achievements

Table XXXII presents the post-test means, standard deviations, and calculated t-values for Head Start and Non-Head Start pupils of grade one, 1969-70. The calculated t-values were not found to be significant. Thus, it appears that the Head Start and Non-Head Start pupils were approximately equaled in their motor development at the end of the first grade.

The interpretation given to the data presented in Tables XXIX through XXXII is as follows: No significant differences were found between the Head Start and Non-Head Start pupils in grade one, 1969-70, at the beginning of the academic year. However, both sub-groups of pupils showed a significant growth in their motor development between the pre-test and post-test administrations of the NMT. During the post-test administration of the NMT, no significant difference was found between the motor development of the Head Start pupils and the Non-Head Start pupils. It appears that the growth rate in motor development was equal for Head Start and Non-Head Start pupils.

Grade Two. The NMT was administered to the second grade pupils, 1969-70, at the end of the academic year. Table XXXIII presents the means, standard deviations, and calculated t-values for the Head Start and Non-Head Start pupils. The calculated t-values indicate that no significant differences were found between the Head Start and Non-Head Start means for the NMT sub-test or total mean scores.

Grade Three. The NMT was administered to the third grade pupils, 1969-70, at the end of the academic year. Table XXXIV presents the means, standard deviations, and t-values calculated for

TABLE XXXII

MEAN, STANDARD DEVIATION AND t-VALUE FOR HEAD START AND NON-HEAD START PUPILS OF GRADE 1, 1969-70: SUB-TEST, POST TEST, NEURO-MUSCULAR TEST

| Student Group | Sub Test* | N | Mean | Stand. Dev. | t Value | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Head Start | 1 | 52 | 2.50 | 0.54 | -0.34 | No | No |
| Non-Head Start | | 22 | 2.55 | 0.51 | | | |
| Head Start | 2 | 52 | 47.62 | 1.21 | -0.34 | No | No |
| Non-Head Start | | 22 | 47.73 | 1.28 | | | |
| Head Start | 3 | 52 | 37.33 | 4.25 | 0.51 | No | No |
| Non-Head Start | | 22 | 36.73 | 4.74 | | | |
| Head Start | 4 | 52 | 17.42 | 0.70 | -1.97 | No | No |
| Non-Head Start | | 22 | 17.73 | 0.55 | | | |
| Head Start | 5 | 52 | 38.83 | 0.73 | -1.68 | No | No |
| Non-Head Start | | 22 | 39.00 | 0.00 | | | |
| Head Start | 6 | 52 | 6.58 | 2.19 | -1.33 | No | No |
| Non-Head Start | | 22 | 7.18 | 1.53 | | | |
| Head Start | Total | 52 | 149.00 | 6.56 | -0.56 | No | No |
| Non-Head Start | | 22 | 149.95 | 6.54 | | | |

*Sub-Test Identification: 1=Drawing, 2=Identification of Body Parts, 3=Physical Achievement, 4=Imitation of Movements, 5=Ocular Pursuits, 6=Visual Achievements

TABLE XXXIII

MEAN, STANDARD DEVIATION AND t-VALUE FOR HEAD START AND NON-HEAD START PUPILS OF GRADE 2, 1969-70: EACH SUB-TEST, POST TEST, NEURO-MUSCULAR TEST

| | Sub Test* | N | Mean | Stand. Dev. | t Value | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Head Start | 1 | 27 | 2.41 | 0.50 | -1.33 | No | No |
| Non-Head Start | | 27 | 2.59 | 0.50 | | | |
| Head Start | 2 | 27 | 47.74 | 1.16 | -0.61 | No | No |
| Non-Head Start | | 27 | 47.89 | 0.42 | | | |
| Head Start | | 27 | 36.93 | 8.50 | -0.22 | No | No |
| Non-Head Start | | 27 | 37.33 | 4.18 | | | |
| Head Start | 4 | 27 | 17.70 | 0.78 | -0.62 | No | No |
| Non-Head Start | | 27 | 17.81 | 0.48 | | | |
| Head Start | 5 | 27 | 38.52 | 1.40 | -1.76 | No | No |
| Non-Head Start | | 27 | 39.00 | 0.00 | | | |
| Head Start | 6 | 27 | 7.56 | 1.97 | -0.90 | No | No |
| Non-Head Start | | 27 | 7.96 | 1.22 | | | |
| Head Start | Total | 27 | 149.15 | 12.82 | -0.78 | No | No |
| Non-Head Start | | 27 | 151.30 | 5.81 | | | |

*Sub-Test Identification: 1=Drawing, 2=Identification of Body Parts, 3=Physical Achievement, 4=Imitation of Movements, 5=Ocular Pursuits, 6=Visual Achievements

TABLE XXXIV

MEAN, STANDARD DEVIATION AND t-VALUE FOR HEAD START VERSUS NON-HEAD START PUPILS OF GRADE 3, 1969-70: SUB-TEST, POST TEST NEURO-MUSCULAR TEST

| Student Group | Sub Test* | N | Mean | Stand. Dev. | t Value | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|
| Head Start | 1 | 25 | 2.64 | 0.49 | -0.58 | No | No |
| Non-Head Start | | 25 | 2.72 | 0.46 | | | |
| Head Start | 2 | 25 | 47.36 | 1.89 | -0.95 | No | No |
| Non-Head Start | | 25 | 47.76 | 0.83 | | | |
| Head Start | 3 | 25 | 40.20 | 2.74 | 0.33 | No | No |
| Non-Head Start | | 25 | 39.92 | 3.15 | | | |
| Head Start | 4 | 25 | 17.80 | 0.50 | 0.91 | No | No |
| Non-Head Start | | 25 | 17.64 | 0.70 | | | |
| Head Start | 5 | 25 | 38.84 | 0.80 | -0.98 | No | No |
| Non-Head Start | | 25 | 39.00 | 0.00 | | | |
| Head Start | 6 | 25 | 7.68 | 1.84 | -0.79 | No | No |
| Non-Head Start | | 25 | 8.04 | 1.24 | | | |
| Head Start | Total | 25 | 153.48 | 5.08 | -0.40 | No | No |
| Non-Head Start | | 25 | 154.04 | 4.63 | | | |

*Sub-Test Identification: 1=Drawing, 2=Identification of Body Parts, 3=Physical Achievement, 4=Imitation of Movements, 5=Ocular Pursuits, 6=Visual Achievements

the Head Start and Non-Head Start pupils. The calculated t-values indicate that no significant differences were found between the Head Start and Non-Head Start pupils for NMT sub-test or total mean scores.

The data presented in Tables XXIX through XXXIV appear to support the following interpretations:

1. Both the Head Start and Non-Head Start pupils in grade one showed a significant change in their behavior on the Neuro-Muscular Test; the change in behavior appears to be equal for both the Head Start and Non-Head Start pupils;

2. The Head Start pupils in grades one, two, and three appear to achieve with an equal degree of success on the NMT at the end of the academic year;

3. The Non-Head Start pupils in grades 1, 2, and 3 appear to achieve with an equal degree of success on the NMT at the end of the academic year;

4. The second grade Head Start and Non-Head Start pupils are approximately equal in motor development at the end of the academic year as measured by the NMT;

5. The third grade Head Start and Non-Head Start pupils are approximately equal in motor development at the end of the academic year as measured by the NMT.

Checklist for Clues to Self-Concept Development

Table XXXV presents a summary of t-values between Head Start and Non-Head Start means for Project ERA grade one; 1967-68, grade one; 1968-69, grade one; 1969-70, grade two; 1969-70 and grade three; 1969-70 as achieved on the pre-test (run 1) and post-test (run 4) of the Checklist for Clues to Self-Concept Development.

TABLE XXXV

SUMMARY OF t-VALUES BETWEEN THE DIFFERENCE IN MEAN SCORES BETWEEN HEAD START AND NON-HEAD START PUPILS OF PROJECT ERA GRADE 1, 1967-68; GRADE 1, 1968-69; GRADE 1, 1969-70; GRADE 2, 1968-69; GRADE 2, 1969-70; AND GRADE 3, 1969-70, AS ACHIEVED ON THE PRE-TEST AND POST-TEST OF THE CHECKLIST FOR CLUES TO SELF-CONCEPT DEVELOPMENT

| Year | Grade | Group | Run | N | Means | Stand. Dev. | t | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|---|---|
| 1967-68 | 1 | Head Start | Pre-Test | 50 | 18.90 | 5.38 | -2.00 | No | Yes |
| | | Non-Head Start | | 38 | 21.13 | 4.87 | | | |
| 1967-68 | 1 | Head Start | Post-Test | 48 | 21.23 | 4.99 | -3.32 | Yes | Yes |
| | | Non-Head Start | | 37 | 24.59 | 4.09 | | | |
| 1968-69 | 1 | Head Start | Pre-Test | 41 | 21.22 | 5.83 | -1.19 | No | No |
| | | Non-Head Start | | 45 | 22.67 | 5.38 | | | |
| 1968-69 | 1 | Head Start | Post-Test | 40 | 24.40 | 4.19 | -1.16 | No | No |
| | | Non-Head Start | | 42 | 25.52 | 4.49 | | | |
| 1969-70 | 1 | Head Start | Pre-Test | 54 | 21.04 | 4.53 | -1.24 | No | No |
| | | Non-Head Start | | 29 | 22.38 | 4.93 | | | |
| 1969-70 | 1 | Head Start | Post-Test | 52 | 23.37 | 3.86 | -2.02 | No | Yes |
| | | Non-Head Start | | 27 | 25.19 | 3.66 | | | |

TABLE XXXV (CONT)

| Year | Grade | Group | Run | N | Means | Stand. Dev. | t | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|---|---|
| 1968-69 | 2 | Head Start | Pre-Test | 39 | 22.05 | 4.90 | -1.58 | No | No |
| | | Non-Head Start | | 44 | 23.77 | 4.95 | | | |
| 1968-69 | 2 | Head Start | Post-Test | 41 | 24.37 | 6.11 | -2.17 | No | Yes |
| | | Non-Head Start | | 45 | 26.62 | 3.17 | | | |
| 1969-70 | 2 | Head Start | Pre-Test | 33 | 21.52 | 5.72 | -2.41 | No | Yes |
| | | Non-Head Start | | 34 | 24.29 | 3.39 | | | |
| 1969-70 | 2 | Head Start | Post-Test | 34 | 23.56 | 5.28 | 2.14 | No | Yes |
| | | Non-Head Start | | 29 | 26.41 | 5.23 | | | |
| 1969-70 | 3 | Head Start | Pre-Test | 28 | 22.04 | 5.10 | -0.81 | No | No |
| | | Non-Head Start | | 25 | 23.26 | 5.80 | | | |
| 1969-70 | 3 | Head Start | Post-Test | 24 | 24.00 | 5.88 | -0.51 | No | No |
| | | Non-Head Start | | 28 | 24.79 | 5.15 | | | |

Grade One (1967-68) Through Grade Three (1969-70). It should be recalled that the pupils in grade one, 1967-68, grade two, 1968-69, and grade three, 1969-70, are an approximately identical group of pupils who have experienced three successive years of Project ERA as they proceeded from grades 1 through 3. During the 1967-68 pre-test, the Head Start pupils were significantly different from the Non-Head Start pupils as measured by the Checklist; the difference was significant at the 0.05 level of significance. During the 1967-68 post-test, the first grade Head Start pupils were significantly different from the Non-Head Start pupils as measured by the Checklist; the difference was significant beyond the 0.01 level of significance. During the pre-test, the 1968-69 second grade Head Start pupils were not significantly different from their Non-Head Start counterparts. During the post-test, the 1968-69 second grade Head Start pupils were significantly different from their Non-Head Start counterparts as measured by the Checklist; the difference was significant at the 0.05 level of significance. During the 1969-70 pre-test and post-test, the Head Start pupils in grade three were not found to be significantly different from their Non-Head Start counterparts.

Grade One (1968-69) Through Grade Two (1969-70). The data presented in Table XXXV indicates that the 1968-69 Head Start first grade pupils were not significantly different from their Non-Head Start counterparts; no significant differences were found during either the pre-test administration or the post-test administration of the Checklist. When the 1968-69 first grade pupils progressed through

the second grade, 1969-70, a significant difference was found between the Head Start and Non-Head Start pupils during the pre-test administration and the post-test administration of the Checklist; the differences were found to be significant at the 0.05 level of significance.

Table XXXVI presents a summary of the calculated t-values for pre-test and post-test mean scores achieved by Head Start and Non-Head Start pupils on the Checklist; Grade One, 1967-68, Grade One, 1968-69, Grade One, 1969-70, Grade Two, 1968-69, Grade Two, 1969-70, and Grade Three, 1969-70.

The data in Table XXXVI indicate that the Head Start pupils of Grade One, 1967-68, Grade One, 1968-69, and Grade One, 1969-70, showed a significant growth in their self-concept development during the pre-test (run 1) and post-test (run 4) administration of the Checklist. The Non-Head Start pupils of Grade One, 1967-68, Grade One, 1968-69, and Grade One, 1969-70, showed a significant growth in their self-concept development during the pre-test and post-test administration of the Checklist; the difference was found to be significant beyond the 0.01 level of significance.

Neither the Head Start nor Non-Head Start pupils in grades 2, 1969-70, showed a significant growth in their self-concept development as measured by the Checklist. Nor did the Head Start or the Non-Head Start pupils in grade 3, 1969-70, show a significant growth in their self-concept development as measured by the Checklist.

Figure 5 presents the raw mean scores achieved by Head Start

TABLE XXXVI

SUMMARY OF t-VALUES BETWEEN THE DIFFERENCE IN MEAN SCORES BETWEEN PRE AND POST ADMINISTRATION OF THE CHECKLIST FOR CLUES TO SELF-CONCEPT DEVELOPMENT FOR HEAD START, NON-HEAD START PUPILS, GRADE 1, 1967-68; GRADE 1, 1968-69; GRADE 1, 1969-70; GRADE 2, 1968-69, GRADE 2, 1969-70; GRADE 3, 1969-70

| Year | Grade | Group | Run | N | Means | Stand. Dev. | t | Significance .01 | Significance .05 |
|---|---|---|---|---|---|---|---|---|---|
| 1967-68 | 1 | Head Start | Pre | 50 | 18.90 | 5.38 | | | |
| | | | Post | 48 | 21.23 | 4.99 | -2.22 | No | Yes |
| | | Non-Head Start | Pre | 38 | 21.13 | 4.87 | | | |
| | | | Post | 37 | 24.59 | 4.09 | -3.32 | Yes | Yes |
| 1968-69 | 1 | Head Start | Pre | 41 | 21.22 | 5.83 | | | |
| | | | Post | 40 | 24.40 | 4.19 | -2.81 | Yes | Yes |
| | | Non-Head Start | Pre | 45 | 22.67 | 5.38 | | | |
| | | | Post | 42 | 25.52 | 4.49 | -2.73 | Yes | Yes |
| 1969-70 | 1 | Head Start | Pre | 54 | 21.04 | 4.53 | | | |
| | | | Post | 52 | 23.37 | 3.86 | 2.77 | Yes | Yes |
| | | Non-Head Start | Pre | 29 | 22.38 | 4.93 | | | |
| | | | Post | 27 | 25.19 | 3.66 | 2.40 | No | Yes |
| 1968-69 | 2 | Head Start | Pre | 39 | 22.05 | 4.90 | | | |
| | | | Post | 41 | 24.37 | 6.11 | -1.86 | No | No |
| | | Non-Head Start | Pre | 44 | 23.77 | 4.95 | | | |
| | | | Post | 45 | 26.62 | 3.17 | -3.29 | Yes | Yes |
| 1969-70 | 2 | Head Start | Pre | 33 | 21.52 | 5.72 | | | |
| | | | Post | 34 | 23.56 | 5.28 | 1.51 | No | No |
| | | Non-Head Start | Pre | 34 | 24.29 | 3.39 | | | |
| | | | Post | 29 | 26.41 | 5.23 | -1.93 | No | No |
| 1969-70 | 3 | Head Start | Pre | 28 | 22.04 | 5.10 | | | |
| | | | Post | 25 | 24.00 | 5.88 | 1.29 | No | No |
| | | Non-Head Start | Pre | 24 | 23.26 | 5.80 | | | |
| | | | Post | 28 | 24.79 | 5.15 | -1.00 | No | No |

and Non-Head Start pupils on the Checklist during runs 1, 2, 3, and 4 for the academic years 1967-68, and 1968-69, and 1969-70. The data indicates a positive self-concept development was occuring for the original sample of grade one pupils, 1967-68, as they progressed through grades 2 and 3.

Figure 5 indicates that both the Head Start and Non-Head Start pupils showed a positive and significant trend in the development of their self-concept as measured by the Checklist. Moreover, Figure 5 graphically illustrates that the Head Start pupils were below their Non-Head Start peers in the development of their self-concept as measured by the Checklist.

Through the method of "least squares"[19] the raw data used to develop Figure 5 was translated into Figure 6. Figure 6 illustrates that the Head Start pupils who experienced three consecutive years of Project ERA had a greater growth rate in their self-concept development than did their Non-Head Start peers. The Head Start slope and the Non-Head Start slope indicate that both sub-groups of pupils had a positive and significant growth in their self-concept development. Further, the slopes indicate that the Head Start pupils "caught" their Non-Head Start counterparts in the development of their self-concept during the third year of Project ERA experience.

Six (6) positions have been identified on the Head Start and

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[19]H. C. Fryer, Concepts and Methods of Experimental Statistics (Boston: Allyn and Bacon, Inc., 1966), pp. 203-24.

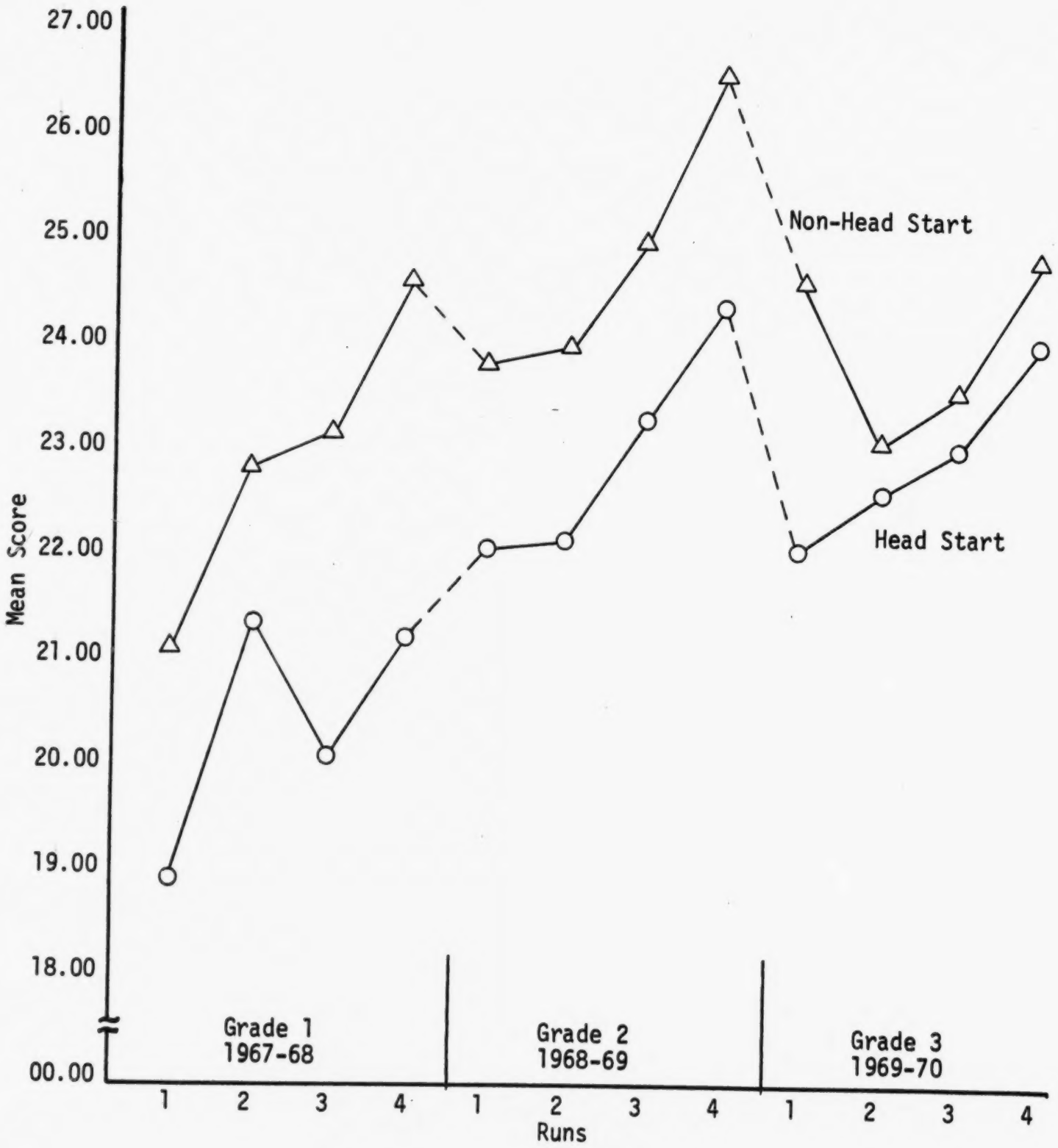


Figure 5

MEAN SCORE VS. RUNS ON CHECKLIST: 1967-68, 1968-69, 1969-70

Non-Head Start slopes in Figure 6. Positions a and b and a' and b' represent the pre-test and post-test behavior, respectively, of the grade one pupils, 1967-68; positions c and d and c' and d' represent the pre-test and post-test behavior, respectively, of the pupils in grade 2, 1968-69; the positions e and f and e' and f' represent the pre-test and post-test behavior, respectively, of the pupils in grade three, 1969-70. The data presented in Table XXXV indicate that the vertical distances between a-a', b-b', and d-d' are statistically significant. The vertical distance between e-e' and f-f' is not statistically significant as given in the data presented in Table XXXV. Thus, statistically speaking, the Head Start and Non-Head Start slopes given in Figure 6 intercept at positions e-e', f-f'.

The interpretation given to Figure 6 follows:

1. The self-concept development of Head Start pupils in Project ERA was significantly lower than the self-concept development of Non-Head Start pupils during grades 1 and 2;

2. The self-concept development of Head Start and Non-Head Start pupils became statistically equal in the third grade;

3. The rate of growth of the self-concept in Head Start pupils was greater than the rate of growth exhibited by Non-Head Start pupils;

4. Head Start pupils require an experiential period of three years in Project ERA in order to equal the self-concept development of Non-Head Start pupils.

These interpretations are also supported by the trends given in the data presented in Table XXXV. The data presented in XXXV shows that the differences found in Head Start and Non-Head Start

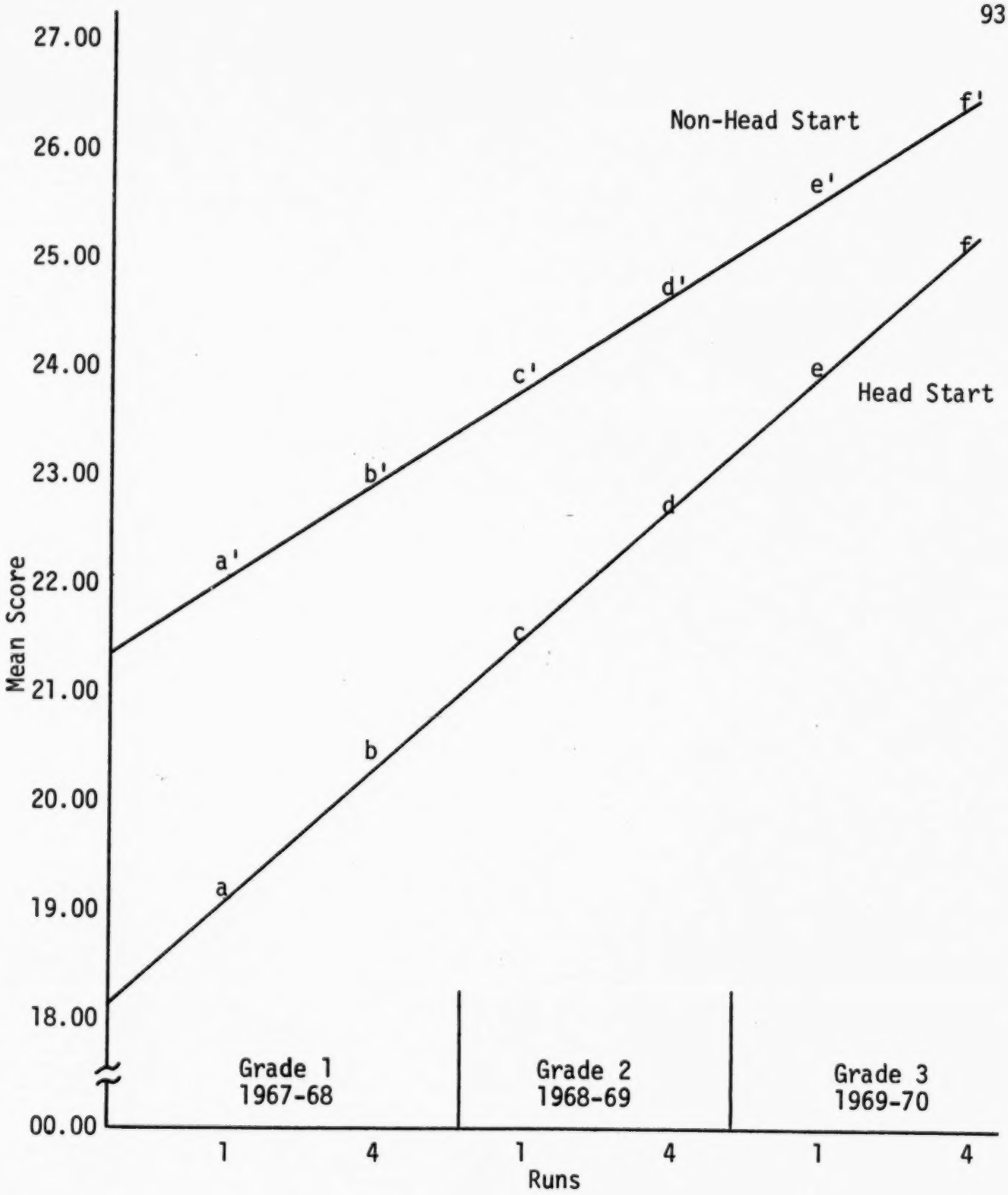


Figure 6

TREND LINES *(HEADSTART PUPILS AND NON-HEADSTART PUPILS) CALCULATED FROM THE PRE- AND POST-TEST DATA RETRIEVED BY THE ADMINISTRATION OF THE CHECKLIST: 1967-68, 1968-69, 1969-70

*as derived through the method of least squares.

pre-test and post-test means become smaller during the three year period under investigation. The Head Start and Non-Head Start pre-test mean difference in 1967-68 was 2.23, for 1968-69 the pre-test difference was 1.72, and for 1969-70 the pre-test difference was 1.22. The Head Start and Non-Head Start post-test means differed in 1967-68 by 3.36 points, by 2.25 points in 1968-69, and by 0.79 points during 1969-70.

# FINDINGS AND RECOMMENDATIONS

Project ERA was a follow-through program established in Monongalia County, West Virginia; and originally funded to support first grade pupils only during 1967-68. A second funding of Project ERA supported pupils in grades one and two during 1968-69; a third funding of Project ERA supported pupils in grades 1, 2, and 3 during 1969-70.

Educational Research and Field Services, West Virginia University, evaluated Project ERA during the three funding periods. The goals of the Project ERA evaluation were to: (1) determine the success the Project achieved during each funding period in meeting its stated objectives, (2) provide a system whereby objective and subjective evaluative data were made available to Project decision-makers, and (3) implement a longitudinal (three year) study of the effects of Project ERA upon the continued development of Head Start pupils.

The major findings of the Project ERA evaluation are detailed in this section of the Report; they were derived from data retrieved by standardized and/or locally developed instruments used in measurement, interviews, checklists, and systematic observations of the on-going Project. The reader is directed to previous sections of this Report for detailed findings and conclusions.

The major recommendations detailed in this section of the Report were derived from the findings, relationships of findings and objectives, and interpretations given to objective and subjective data reported herein. The reader is directed to previous sections of this Report for additional recommendations and guidelines as related to Project ERA and Follow Through implementation.

Findings

Principally, the findings reported herein were related to any longitudinal behavior changes observed in Head Start and Non-Head Start pupils. Where applicable, discussions may be made on data related to specific grade levels or Project ERA funding periods.

1. As measured by the California Test of Mental Maturity, the Head Start pupils consistently scored below the Non-Head Start pupils in their non-verbal, verbal, and total I.Q. means. During the three years under study, the CTMM was administered a total of six (6) times --- three administrations to grade one pupils, two administrations to grade two pupils, and one administration to grade three pupils. The range of total I.Q. means achieved by the Head Start pupils was 98.13 to 107.76; the range of the total I.Q. means achieved by Non-Head Start pupils was 98.24 to 116.11. Generally, the Head Start and Non-Head Start pupils achieved total I.Q. means which tended to be greater than the national total I.Q. mean of 100. No significant changes or trends were observed in either the Head Start or Non-Head Start pupil behavior on the CTMM during the period under investigation.

2. During the first and second grade, the Head Start pupils achieved Grade Level Equivalents below the Grade Level Equivalents achieved by the Non-Head Start pupils, as measured by the California Achievement Test; further, both sub-groups achieved GLE's lower than the expected GLE's. During grade three, both Head Start and Non-Head Start pupils achieved a total Grade Level Equivalent greater than the expected total Grade Level Equivalent. The Head Start pupils achieved reading and arithmetic Grade Level Equivalents equal to the Non-Head Start

reading and arithmetic GLE's in the third grade; the Head Start pupils achieved a language Grade Level Equivalent which exceeded the Grade Level Equivalent achieved by Non-Head Start pupils in the third grade. The Head Start and Non-Head Start third grade pupils achieved equal total Grade Level Equivalents. A discernable trend indicated that the Head Start pupils were below their Non-Head Start counterparts in academic achievement during grades one and two but equaled or exceeded both the expected or Non-Head Start GLE during the third year of Project ERA.

3. The data for the three year period appears to indicate that the Non-Head Start pupil generally scored higher on the Neuro-Muscular Test during the first and second grade. Further, the data indicates that Head Start and Non-Head Start pupils achieved an equal degree of motor development during the first, second, and third grades. At the end of the third grade, the Head Start and Non-Head Start pupils were found to be approximately equal in motor development as measured by the NMT.

4. As measured by the Checklist for Clues to Self-Concept Development, the Head Start pupils achieved significantly lower means on self-concept development than did their Non-Head Start counterparts during the first and second grade. At the end of grade three, the Head Start and Non-Head Start pupils were not found to be significantly different in self-concept development. The rate of growth of the self-concept in Head Start pupils was greater than the rate of growth exhibited in Non-Head Start pupils during the three years under study.

5. It is apparent that Project ERA requires at least three years before the learning disadvantages of rural, poor Appalachian children can be overcome. Further, the curriculum and teaching methodology of Project

ERA requires a period of at least three years before they affect, in a positive direction, the learning behaviors of rural, poor Appalachian children. This study appears to indicate that an experiential period of three years in Project ERA is necessary before Head Start pupils equal their Non-Head Start counterparts in academic and self-concept development. In terms of motor development, it appears that Head Start pupils do not tend to be as developed as Non-Head Start pupils at the time of their original enrollment in Project ERA; however, the Head Start pupil equals his Non-Head Start counterpart in motor development at the end of one year in Project ERA as measured by the Neuro-Muscular Test.

6. The classroom teachers in Project ERA scored above average on the Project ERA Teacher Effectiveness Scale. With the exception of the physical education instructor, the methods and/or techniques used by the special teachers did not appear to be compatible to the philosophy of Project ERA; the music and art special teachers consistently scored lower than the classroom teachers on the Scale.

7. Instructional teacher-aides were an asset to the instructional component of Project ERA. Teacher-aides were an integral part of the "instructional team;" they were actively involved in one-to-one relationships and in the small group learning sessions implemented in Project ERA.

8. The data presented in this report indicates that Project ERA was a successful model for follow-through programs. Project ERA provided learning and/or developmental experiences which allowed Head Start pupils to: (1) develop a positive self-concept, (2) develop a value system,

(3) develop a fluency in language, symbolic thinking, and cognitive understanding, and (4) develop muscular coordination and sensory discrimination. The Project ERA model assisted Head Start pupils to equal or exceed the developmental process of Head Start pupils after a period of three years.

9. The attitudes toward schools of parents actively involved in Project ERA were more positive than non-involved parents. The involved parents believed that Project ERA was successful in improving the home to school transition of Head Start pupils and the Project assisted in developing a more positive perception of school for the Head Start pupils.

Recommendations

1. It is recommended that a comprehensive Management Information System be developed in future Project ERA programs. As presently established, the data/information system for Project ERA does not meet requirements for long-range program planning and evaluation. The Management Information System must include relevant data for the planning and evaluation of special pupil personnel services; for example, there appears to be a dearth of data relating to the psychological, social, and medical services components of Project ERA.

2. It is recommended that each component of Project ERA develop measurable objectives. In order to facilitate and expedite program evaluation, data housed in the Management Information System should be related to measurable objectives of Project ERA components.

3. It is recommended that the philosophy, goals, purposes, and objectives of Project ERA be incorporated into the total school system of Monongalia County. It would appear that the success of the sample of rural, poor Appalachian children in Project ERA could be achieved by all pupils in the Monongalia County School System through the integration of Project ERA within the classrooms on Monongalia County.

4. It is recommended that the total community of Monongalia County support the implementation of Project ERA into all the elementary schools in Monongalia County. It would appear that a cooperative effort supported through local, state, and federal funds would provide a significant impact upon the learning of all children in Monongalia County through the Project ERA model.

5. It is recommended that Project ERA be continued and funded at a higher level. The Project has shown significant success in its mission to develop the social, psychological, academic, and physical characteristics of rural, poor Appalachian children in Monongalia County.

Appendix A

101/102

CHECKLIST FOR CLUES TO SELF-CONCEPT DEVELOPMENT

Student Name _____ School_____ Date_____

1. SOCIAL PARTICIPATION

( ) does not join with others in any activities
( ) reluctantly participates in group activities
( ) eagerly enters into group activities
( ) responsibly participates in group activity.

2. SOCIAL ACCEPTANCE

( ) is not sought after by most of his classmates
( ) wins acceptance from only a few individuals in his classroom
( ) sought after by classmates
( ) received enthusiastically by most of his classmates.

3. SOCIAL CONCERN FOR OTHERS

( ) takes advantage of others when he thinks he can get away with it
( ) unknowingly trespasses on rights of others
( ) keenly sensitive of the rights of others
( ) invariably defends the rights of others.

4. COOPERATION

( ) consistently non-cooperative
( ) usually reluctant to help in an undertaking
( ) sometimes does more than his share
( ) always ready to do whatever needs to be done.

5. STABILITY

( ) seems to withdraw
( ) easily upset when things go wrong
( ) adjusts well to trying situations
( ) meets stress calmly and independently solves the problem.

6. SELF APPRAISAL

( ) constantly under-rates himself
( ) seldom recognizes his strengths and weaknesses
( ) accepts and works with his strengths and weaknesses
( ) constantly enjoys productive use of his abilities

7. DEGREE OF INDEPENDENCE

( ) is completely dependent upon others
( ) gets started only with much prodding
( ) starts and continues with little guidance
( ) often initiates and carries out undertakings without help when such help would make his dependent.

8. SOCIAL SELF-PERCEPTION (How he is affected by his environment)

( ) seems to feel that others feel he is inferior
( ) seems to feel that others feel he is aggressive
( ) feelsthat most people accept him
( ) rightfully seems to feel that his parents, teachers, and peers esteem his highly.

OPERATIONAL DEFINITIONS FOR SELF-CONCEPT CHECKLIST

1. SOCIAL PARTICIPATION

( ) does not join with others in any group activities

-isn't there
-stands back and watches
-not first chosen for parts
-just sits and doesn't bother anyone
-withdrawn
-apathetic

( ) reluctantly participates in group activities

-sometimes begins to join and then decides not to
-starts playing, decides no fun and withdraws
-reluctant to physically join, last to come along
-will just as soon observe as participate
-shows slight interest but holds back: sometimes join with encouragement

( ) eagerly enters into group activities

-responds to suggestions
-sometimes volunteers
-wants to be a part regardless of what is taking place
-when does things, does them with enthusiasm
-hands are up before instructions are given

( ) responsibly participates in group activity

-aware that he (she) is not involved with others as far as group activities are concerned
-always makes sure others are taking their turn
-makes sure others are ready for activities
-has sense of feeling that others must join to make it work

2. SOCIAL ACCEPTANCE

( ) is not sought after by most of his classmates

-hitting or doing something to make others unhappy
-hitting, spitting, stealing
-not willing to take turn in line, shoving, pushing, etc.
-last to be chosen for group activities
-children don't seek him out to talk or play with

( ) wins acceptance from only a few individuals in his classroom

-plays with same few people all the time

( ) sought after by classmates

-one who is good in activities, others want him in their group

( ) received enthusiastically by most of his classmates

-missed by class
-class wants to write him a letter when absent

3. SOCIAL CONCERN FOR OTHERS

( ) takes advantage of others when he thinks he can get away with it

-is doing something wrong and knows it but does it regardless, feels he can get away with it

( ) unknowingly trespasses on right of others

-trespasses but really doesn't know he is doing wrong

( ) keenly sensitive of the rights of others

-concerned sometimes more for others than his own right
-apologizes freely
-disturbed when they know "they" did something to another child

( ) invariably defends the right of others

-very concerned that all children receive proper share of what is due

4. COOPERATION

( ) consistently non-cooperative

-doesn't do what you want him to do when you want him to do it
-won't line up with others
-when all are listening to story he will say, "I don't want to hear the story"
-always says, "I don't want to"

( ) usually reluctant to help in an undertaking

-will join the group but with reluctance
-will cooperate but needs special invitation
-slow to participate but will do well when he does participate

( ) sometimes does more than his share

-offers to help in activity
-"can I show her how to do this"
-will help a child but sometimes not the way teacher wants it done
-helps pass out materials for teacher
-tries to help - sometimes when not asked to

( ) always ready to do whatever needs to be done

-dust erasers, water flowers, etc.
-asks, "can I help you"
-have ability to do what they ask to do

5. STABILITY

( ) seems to withdraw

-appears inattentive to what is going on
-won't turn pages when others do
-daydreaming
-doesn't take part in discussion
-might be staring with vague look in his eyes
-may be in a world of fantasy

( ) easily upset when things go wrong

-crys
-tenses up (fear)
-breaks pencil - tears up paper
-puts paper, pencils in mouth
-covers up face (hiding)
-wants mother; wants to go home

( ) adjusts well to trying situations

-explains to teacher why the mistake was made
-sees cause and relationship to things
-accustomed to outside toilet may have difficulty adjusting to insider facilities

( ) meets stress calmly and independently solves and problem

-if didn't receive handout will go to the closet and get his own
-breaks thermos jug - starts crying - frustrated - gets sponge to clean up
-will do something extra on his own to solve stress situation
-nose bleed and takes care of himself (herself)
-will do something extraordinary to accomplishing tasks

6. SELF APPRAISAL

( ) constantly under-rates himself

-I can't do it
-child indicates he can't do it

( ) seldom recognizes his strengths and weaknesses

-can't distinguish between job poorly done and one well done
-volunteers but may not realize he can't carry out the task

( ) accepts and works with his strengths and weaknesses

-honestly asks "isn't this better", asks for acceptance of better job
-asks for directions and help with his apparent weaknesses

( ) constantly enjoys productive use of his abilities

-volunteers for extra work
-wants to play or participate because he knows he excels

7. DEGREE OF INDEPENDENCE

( ) is completely dependent upon others

-won't go to lunch room unless someone accompanies him
-wants to be shown over and over again
-constantly asking for help
-just waits until someone tells or shows what to do
-won't tie shoes unless someone else does it
-no desire to do for himself

( ) gets started only with much prodding

-last child to get started
-pre-occupied before starting
-after instructions needs additional prodding
-may stay in seat until all have left the room, then will leave

( ) starts and continues with little guidance

-a joy to have
-hears directions and works independently by himself
-with little direction will perform tasks
-asks few questions after initial instructions

( ) often initiates and carries out undertakings without help when such help would make him dependent

-will initiate and go beyond instruction
-says doesn't want help and will do it
-job himself
-refuses help and succeeds in the task independently
-wants to do it his way

8. SOCIAL SELF-PERCEPTION (how he is affected by his environment)

( ) seems to feel that others feel he is inferior

-they say I can't
-imposed upon by others
-feels inferior, sees himself as inferior because of outside influence

( ) seems to feel that others feel he is aggressive

-behavior will take place as a result of what happened in #1
-why did you do that, they told me to do that
-aggressive because of environment

( ) feels that most people accept him

-doesn't have to ask to join the group, he just joins as he knows he is accepted
-when disagrees with child, will refer to fact that other children agree with him

( ) rightfully seems to feel that his parents, teachers, and peers esteem him highly

-knows he can do it and does it
-will offer to assist others as he knows he can offer help
-strongly shows pride
-everybody likes him (he will say this)

Appendix B



CHALKBOARD (3 points)

Have child produce figures on the chalkboard as directed. Score only accurate productions.

0 = No Figures

1 = Circle

2 = Circle and double circles which end toward the midline

3 = Circle, double circles, and two lines which connect the x's

Example:

x

x x

x

A. CIRCLE

| | | | | |
|---|---|---|---|---|
| Preferred Hand | right | left | | |
| Size of drawing | golfball | softball | basketball | larger |
| Position of drawing with reference to midline of body | right | left | center | |
| Accuracy of Production | poor | fair | good | |
| Direction | Clockwise | Counter-clockwise | | |

B. DOUBLE CIRCLES

Relative Size of Drawings

both same right larger left larger

Position of Drawing with Reference to each other

one high, one low same level over-lapping

Direction of movements of two hands

Clockwise Counter-clockwise

Clockwise Counter-clockwise

Relative accuracy of two drawings

| | | | |
|---|---|---|---|
| | poor | fair | good |
| | poor | fair | good |
| Attention | right | left | |

C. LATERAL LINE

| | | |
|---|---|---|
| Use of Body | yes | no |
| Use of hand | yes | no |
| Bowing of line | yes | no |
| Change hands | yes | no |

D. VERTICAL LINE

| | | |
|---|---|---|
| Use of body | yes | no |
| Use of hand | yes | no |
| Bowing of line | yes | no |
| Change hands | yes | no |

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I. IDENTIFICATION OF BODY PARTS: (48 points)

Have child touch various body parts on verbal command.

| | | | | |
|---|---|---|---|---|
| HEAD | 0 | 1 | 2 | 3 |
| KNEES | 0 | 1 | 2 | 3 |
| EARS | 0 | 1 | 2 | 3 |
| HIPS | 0 | 1 | 2 | 3 |
| EYES | 0 | 1 | 2 | 3 |
| ELBOWS | 0 | 1 | 2 | 3 |
| MOUTH | 0 | 1 | 2 | 3 |
| NOSE | 0 | 1 | 2 | 3 |
| ANKLES | 0 | 1 | 2 | 3 |
| SHOULDERS | 0 | 1 | 2 | 3 |
| CHEST | 0 | 1 | 2 | 3 |
| BACK | 0 | 1 | 2 | 3 |
| STOMACH | 0 | 1 | 2 | 3 |
| WRISTS | 0 | 1 | 2 | 3 |
| TOES | 0 | 1 | 2 | 3 |
| FINGERS | 0 | 1 | 2 | 3 |

SCALE: 0 = No Response

1 = One part of Pair

2 = Hesitates Or Feels for Part

3 = Accurate Response

II. WALK BALANCE BEAM (12 points)

Have child step on balance beam at one end and walk as directed to other end.

| | | | | | |
|---|---|---|---|---|---|
| a. | FORWARD | 0 | 1 | 2 | 3 |
| b. | BACKWARD | 0 | 1 | 2 | 3 |
| c. | SIDEWISE (right) | 0 | 1 | 2 | 3 |
| d. | SIDEWISE (left) | 0 | 1 | 2 | 3 |

SCALE:

0 = Failure

1 = Steps off Nor More than Twice

2 = Completed but Poor Form

3 = Completed With Good Form

III. CRAWLING (3 points)

Have child crawl the length of a 10 feet mat.

SCALE:

0 = No Response

1 = Scooting

2 = Interchanging Pattern

3 = Successful Cross-pattern Crawling

IV. JUMPING (24 points)

Have child jump and hop with various rhythmic patterns as directed.

| | | | | |
|---|---|---|---|---|
| a. BOTH FEET | 0 | 1 | 2 | 3 |
| b. RIGHT FOOT | 0 | 1 | 2 | 3 |
| c. LEFT FOOT | 0 | 1 | 2 | 3 |
| d. SKIP | 0 | 1 | 2 | 3 |
| e. HOP 1/1 | 0 | 1 | 2 | 3 |
| f. HOP 2/2 | 0 | 1 | 2 | 3 |
| g. HOP 2/1 | 0 | 1 | 2 | 3 |
| h. HOP 1/2 | 0 | 1 | 2 | 3 |

SCALE: 0 = No Response

1 = Hesitates Before or Between Jumps

2 = Jerky, Poor Form

3 = Good Form

V. OBSTACLE COURSE

Have child move through obstacle course (chairs and broom sticks) without touching any obstacles.

a. Step over knee high obstacle

b. Squeeze through narrow opening

c. Duck under shoulder high obstacle

(NOTE: Student Fails If He Touches Any Obstacle)

SCALE: 0 = No Obstacles Cleared

1 = 1 Obstacle Cleared

2 = 2 Obstacles Cleared

3 = 3 Obstacles Cleared

VII. OCULAR PURSUITS (39 points)

Have child follow thumb tack on pencil eraser as directed.

MONOCULAR

1. Left Eye

| | | | | | |
|---|---|---|---|---|---|
| (a) lateral | 0 | 1 | 2 | 3 |
| (b) vertical | 0 | 1 | 2 | 3 |
| (c) diagonal | 0 | 1 | 2 | 3 |
| (d) rotary | 0 | 1 | 2 | 3 |

2. Right Eye

| | | | | |
|---|---|---|---|---|
| (a) lateral | 0 | 1 | 2 | 3 |
| (b) vertical | 0 | 1 | 2 | 3 |
| (c) diagonal | 0 | 1 | 2 | 3 |
| (d) rotary | 0 | 1 | 2 | 3 |

NOTE: Wait three minutes before starting Biocular.

BIOCULAR

| | | | | |
|---|---|---|---|---|
| (a) lateral | 0 | 1 | 2 | 3 |
| (b) vertical | 0 | 1 | 2 | 3 |
| (c) diagonal | 0 | 1 | 2 | 3 |
| (d) rotary | 0 | 1 | 2 | 3 |
| (e) convergence | 0 | 1 | 2 | 3 |

SCALE:

0 = No Response

1 = Loses Contact

2 = Jerky Eye Movement

3 = Successful Movement

VI. IMITATION OF MOVEMENTS (18 points)

Have child imitate movements produced by tester. (As follows)

a. Right arm horizontal 0 1 2 3

b. Left arm horizontal 0 1 2 3

c. Right and Left arms horizontal 0 1 2 3

d. Right arm horizontal
Left arm vertical 0 1 2 3

e. Left arm horizontal
Right arm vertical 0 1 2 3

f. Right and Left arms vertical 0 1 2 3

SCALE: 0 = No Response

1 = Response Parallel (Not Reversed)

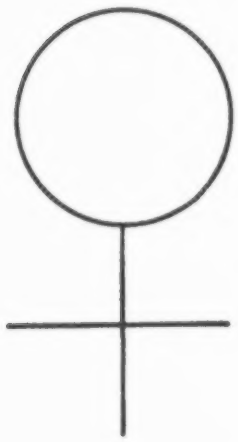
2 = Correct Response 2nd attempt

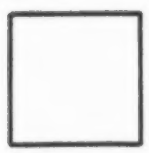
3 = Correct 1st Response

VIII. VISUAL ACHIEVEMENT FORMS (9 points)

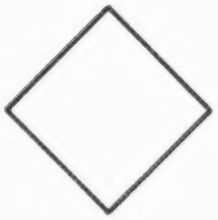
Have child reproduce forms as directed. Each form scores as one point.

1.

2. 

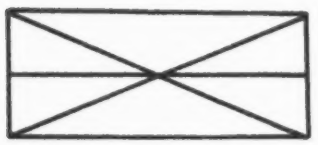
3. 

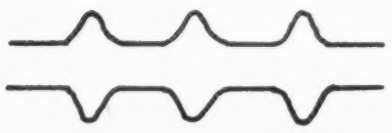
4.

5. 

6.

7.

8. 

9. 

Appendix C

PROJECT ERA TEACHER EFFECTIVENESS SCALE

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This scale is to be used by the evaluator for purposes of evaluation of the teacher effectiveness in Project ERA classrooms. Teacher effectiveness, as used herein, is defined as those selected observable teacher behaviors required to meet the objectives of Project ERA. Emphasis in the scale is given to teacher skills and methods.

In marking the scale, the evaluator estimates the rating for the quality or ability listed and places an "X" in the proper position on the graduates scale following the individual statements.

I. Teacher

1. Keeps children interested.

low ___:___:___:___:___:___:___:___:___ high

2. Exhibits an interest in pupils response and/or questions.

low ___:___:___:___:___:___:___:___:___ high

3. Provides for the development of individual and/or group skills.

low ___:___:___:___:___:___:___:___:___ high

4. Allows or permits self-expression or exploration by the pupil.

low ___:___:___:___:___:___:___:___:___ high

5. Provides a wide variety of experiences to meet different individual as well as group purposes or goals.

low ___:___:___:___:___:___:___:___:___ high

6. Exhibits the ability to elicit and direct discussion.

low ___:___:___:___:___:___:___:___:___ high

7. Uses a vareity of teaching aides in implementing learning experiences.

low ___:___:___:___:___:___:___:___:___ high

8. Plans work so that all pupils may experience some success.

low ___:___:___:___:___:___:___:___:___ high

9. Exhibits ability to encourage pupils to plan their school work.

low ___:___:___:___:___:___:___:___:___ high

10. Maintains a productive emotional climate in the classroom.

low ___:___:___:___:___:___:___:___:___ high

COMMENTS: (Strengths and Weaknesses)